Introduction

This paper contains the computation of the motive of the irreducible $\mathrm{SL}_4(k)$-character variety of torus knots for any algebraically closed field k of zero characteristic. The calculation is based on the methods introduced in the paper [1].

The notations used in this paper are the following:

- R_4^{irr} is the irreducible $\mathrm{SL}_4(k)$-representation variety of torus knots, that is, the variety of irreducible representations $\rho : \Gamma \to \mathrm{SL}_4(k)$ where $\Gamma = \Gamma_{n,m}$ is the fundamental group of the complement of the (n, m)-torus knot (see section 4 of [1]).
- $\mathfrak{M}_4^{\mathrm{irr}} = R_4^{\mathrm{irr}} /\!\!/ \mathrm{SL}_4(k)$ is the irreducible $\mathrm{SL}_4(k)$-character variety of torus knots, that is, the moduli space of representations (see section 4 of [1]).
- $\kappa = (\boldsymbol{\epsilon}, \boldsymbol{\varepsilon})$ is a configuration of eigenvalues, that is a collection of possible eigenvalues for the matrices A and B of a torus knot representation $\rho = (A, B)$ (see section 4 of [1]).
- τ is the type of a semi-simple filtration of a torus knot representation (see section 2.1 of [1]).
- ξ is the shape of the type τ, that is the collection of dimensions and multiplicities of each isotypic component (see section 2.1 of [1]).
- σ_A are the collections of eigenvalues of A for each isotypic component of a torus knot representation $\rho = (A, B)$ (see section 7.1 of [1]).
- σ_B are the collections of eigenvalues of B for each isotypic component of a torus knot representation $\rho = (A, B)$ (see section 7.1 of [1]).
- $\mathcal{M}_\tau$ is the space parametrizing possible completions of a semi-simple representation to a general representation of type τ (see section 4 of [1])
- $\mathcal{G}_\tau$ is the gauge group acting on $\mathcal{M}_\tau \times \mathrm{SL}_4(k)$ that identifies isomorphic completions (see section 4 of [1]).
- $\mathfrak{M}_\tau^{\mathrm{irr}}$ is the variety of possible semi-simplifications of a representation of type τ (see section 4 of [1]).
- $R(\tau)$ is the variety of representations of type τ.
- $m_\kappa(\tau)$ is the multiplicity of the type τ, that is the number of isomorphic components $R(\tau')$ of types τ' with the same shape as τ but whose eigenvalues are given by a permutation of the ones of τ that preserves their multiplicity (see section 5 of [1]).
- $C_{\pi,\pi'}$ are the number of isomorphic components given by configurations of eigenvalues with the same structure of repeated eigenvalues (see Section 6 of [1]). Here, π, π' are two partitions of 4 that determine the number of repeated eigenvalues of the matrices A and B of a representation $\rho = (A, B)$. If $\pi = \{1^{e_1}, \dots, 4^{e_4}\}$ and $\pi' = \left\{1^{e'_1}, \dots, 4^{e'_4}\right\}$ we have the following characterization in terms of multinomial numbers (Theorem 6.8 of [1])

$$C_{\pi,\pi'} = \frac{4}{nm} \binom{n}{e_1, \dots, e_4} \binom{m}{e'_1, \dots, e'_4}.$$

Combinatorial formulas for the motives $[\mathcal{M}_\tau], [\mathcal{G}_\tau]$ and $[\mathfrak{M}_\tau^{\mathrm{irr}}]$ are described in section 5 of [1] in terms of the structure of the type τ.

The structure of the paper is as follows. Each section describes the count of the motive $[\mathfrak{M}_\kappa]$ for a possible configuration of eigenvalues κ. For that purpose, we analyze all the types τ compatible with κ and compute the motives $[R(\tau)]$. A configuration of eigenvalues κ not appearing as a section of the paper means that $R_\kappa^{\mathrm{irr}} = \emptyset$ (see Remark 4.5 and Proposition 8.1 of [1]). In the final section of this paper, we summarize the results for each configuration κ and we provide the final result depending on the combinatorial coefficients $C_{\pi,\pi'}$.

Warning: The script generating this paper is only valid for rank ≤ 4. The result for higher rank may not be correct.

1. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_1, \epsilon_1, \epsilon_2)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_4, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_4, \epsilon_2, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 6.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 3\,q^{14} + 5\,q^{13} + 5\,q^{12} + 2\,q^{11} - 2\,q^{10} - 5\,q^9 - 5\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_4, \epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q^2.$
- $[\mathcal{G}_\tau] = (q-1)^2 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{17} - 3\,q^{16} + 2\,q^{15} + 2\,q^{14} - q^{13} + q^{12} - 5\,q^{11} + q^{10} + 2\,q^8 + 3\,q^7 - 3\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_4, \epsilon_2, \epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_4,\epsilon_3).$

- $[\mathcal{M}_\tau] = q^3 - q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + 2\,q^{12} + 2\,q^{11} + q^{10} - q^9 - 2\,q^8 - 2\,q^7 - q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^4 - q^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 6.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_4,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = \left(q^2 - q\right)^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 6.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_4,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = \left(q^2 - q\right)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_4,\epsilon_3).$

- $[\mathcal{M}_\tau] = \left(q^2 - 1\right)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^3 - q^2.$
- $[\mathcal{G}_\tau] = (q-1)^2 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{17} - 3\,q^{16} + 2\,q^{15} + 2\,q^{14} - q^{13} + q^{12} - 5\,q^{11} + q^{10} + 2\,q^8 + 3\,q^7 - 3\,q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_4,\epsilon_1,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^3$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_4,\epsilon_3).$

- $[\mathcal{M}_\tau] = \left(q^2-q\right)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 12$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_4,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 12$.

Total count of $\kappa = ((\epsilon_1,\epsilon_1,\epsilon_1,\epsilon_2),(\varepsilon_1,\varepsilon_2,\varepsilon_3,\varepsilon_4))$

$[R_\kappa^{\mathrm{red}}] = 8\,q^{17} + 4\,q^{16} + 16\,q^{15} + 22\,q^{14} + 16\,q^{13} + 20\,q^{12} + 2\,q^{11} + 6\,q^{10} + 6\,q^7 - 4\,q^6,$
$[R_\kappa^{\mathrm{irr}}] = q^{18} - 4\,q^{17} + 5\,q^{16} - q^{15} - 3\,q^{14} + 3\,q^{13} - 5\,q^{12} + 7\,q^{11} - 2\,q^{10} + q^9 - 6\,q^7 + 4\,q^6,$
$[R_\kappa] = q^{18} + 4\,q^{17} + 9\,q^{16} + 15\,q^{15} + 19\,q^{14} + 19\,q^{13} + 15\,q^{12} + 9\,q^{11} + 4\,q^{10} + q^9,$
$[\mathfrak{M}_\kappa] = q^3 - 4\,q^2 + 6\,q - 4.$

2. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_2)$

Total count of $\kappa = ((\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2), (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_2))$

$[R^{\mathrm{red}}_\kappa] = q^{16} + 2\,q^{15} + 5\,q^{14} + 6\,q^{13} + 8\,q^{12} + 6\,q^{11} + 5\,q^{10} + 2\,q^9 + q^8,$
$[R^{\mathrm{irr}}_\kappa] = 0,$
$[R_\kappa] = q^{16} + 2\,q^{15} + 5\,q^{14} + 6\,q^{13} + 8\,q^{12} + 6\,q^{11} + 5\,q^{10} + 2\,q^9 + q^8,$
$[\mathfrak{M}_\kappa] = 0.$

3. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_3)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2), \quad \sigma_B = (\epsilon_2, \epsilon_3, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{16} - 3\,q^{15} + 3\,q^{13} + 2\,q^{12} + 3\,q^{11} - 4\,q^{10} - 3\,q^9 - 3\,q^8 + 4\,q^6$
- $m_\kappa(\tau) = 1.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_2, \epsilon_3, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 1.$

$$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{10} + 2\,q^9 + 3\,q^8 + 3\,q^7 + 2\,q^6 + q^5$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{17} - 3\,q^{16} + 2\,q^{15} + 2\,q^{14} - q^{13} + q^{12} - 5\,q^{11} + q^{10} + 2\,q^8 + 3\,q^7 - 3\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 2\,q^{11} + 2\,q^{10} + q^9 - q^8 - 2\,q^7 - 2\,q^6 - q^5$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + 3\,q^{12} + 4\,q^{11} + 3\,q^{10} - 3\,q^8 - 4\,q^7 - 3\,q^6 - q^5$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + 2\,q^{12} + 2\,q^{11} + q^{10} - q^9 - 2\,q^8 - 2\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 2\,q^{13} + q^{12} - q^{11} - 3\,q^{10} - 3\,q^9 - q^8 + q^7 + 2\,q^6 + q^5$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,2)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^4 - q^3 - q^2 + q.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q^2.$
- $[\mathcal{G}_\tau] = (q-1)^2 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{17} - 4\,q^{16} + 3\,q^{15} + 3\,q^{14} - q^{13} + q^{12} - 7\,q^{11} + q^{10} + 3\,q^8 + 4\,q^7 - 4\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 1$.

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = q^3 - q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_3,\epsilon_2).$

- $[\mathcal{M}_\tau] = q^4 - q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 1$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^4 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{13} + q^{12} - q^{10} - 2\,q^9 - q^8 + q^6 + q^5$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_3,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 2$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_3,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{17} - 3\,q^{16} + 2\,q^{15} + 2\,q^{14} - q^{13} + q^{12} - 5\,q^{11} + q^{10} + 2\,q^8 + 3\,q^7 - 3\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + q^{14} - q^{13} - 2\,q^{12} - 2\,q^{11} + 2\,q^9 + 2\,q^8 + q^7 - q^6 - q^5$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^3 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_2, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

Total count of $\kappa = ((\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2), (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_3))$

$[R_\kappa^{\mathrm{red}}] = 6\,q^{17} + 3\,q^{16} + 13\,q^{15} + 17\,q^{14} + 11\,q^{13} + 14\,q^{12} + 5\,q^{10} + q^9 + q^8 + 5\,q^7 - 4\,q^6,$
$[R_\kappa^{\mathrm{irr}}] = q^{18} - 3\,q^{17} + 4\,q^{16} - 2\,q^{15} - 3\,q^{14} + 3\,q^{13} - 3\,q^{12} + 7\,q^{11} - 2\,q^{10} - q^8 - 5\,q^7 + 4\,q^6,$
$[R_\kappa] = q^{18} + 3\,q^{17} + 7\,q^{16} + 11\,q^{15} + 14\,q^{14} + 14\,q^{13} + 11\,q^{12} + 7\,q^{11} + 3\,q^{10} + q^9,$
$[\mathfrak{M}_\kappa] = q^3 - 3\,q^2 + 5\,q - 4.$

4. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 8.$

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_2, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{16} - 3\,q^{15} + 3\,q^{13} + 2\,q^{12} + 3\,q^{11} - 4\,q^{10} - 3\,q^9 - 3\,q^8 + 4\,q^6$
- $m_\kappa(\tau) = 3.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_2, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 12.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 6.$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + 4\,q^{15} + q^{14} - 4\,q^{12} - 4\,q^{11} + q^{10} + 2\,q^9 + 5\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 8.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_2, \epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \left(q^2-1\right)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^4 - q^2.$
- $[\mathcal{G}_\tau] = (q-1)^2 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{18} - 3\,q^{17} - q^{16} + 6\,q^{15} + 2\,q^{14} - 6\,q^{12} - 6\,q^{11} + q^{10} + 3\,q^9 + 7\,q^8 - 4\,q^6$
- $m_\kappa(\tau) = 6.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \left(q^2-q\right)^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^4 - q^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \left(q^2-q\right)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 24.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 48$.

$$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - q$.
- $[\mathcal{G}_\tau] = (q-1)^2 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + 4\,q^{15} + q^{14} - 4\,q^{12} - 4\,q^{11} + q^{10} + 2\,q^9 + 5\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 8$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + q^{15} - q^{14} - 2\,q^{13} - 2\,q^{12} + 2\,q^{10} + 2\,q^9 + q^8 - q^7 - q^6$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q^2.$
- $[\mathfrak{M}_\tau^{\rm irr}] = q-2.$
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^3.$
- $[\mathcal{G}_\tau] = (q-1)^4 q^2.$
- $[\mathfrak{M}_\tau^{\rm irr}] = 1.$
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 48.$

Total count of $\kappa = ((\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2),(\varepsilon_1,\varepsilon_2,\varepsilon_3,\varepsilon_4))$

$[R_\kappa^{\rm red}] = 22\,q^{18} + 22\,q^{17} + q^{16} + 39\,q^{15} + 28\,q^{14} + 25\,q^{13} + 16\,q^{12} - 21\,q^{11} + 4\,q^{10} - 11\,q^9 + 19\,q^8 + 18\,q^7 - 18\,q^6,$

$[R_\kappa^{\rm irr}] = q^{20} + 4\,q^{19} - 12\,q^{18} - 4\,q^{17} + 24\,q^{16} - 11\,q^{15} - 3\,q^{14} - 7\,q^{13} - 6\,q^{12} + 25\,q^{11} - 3\,q^{10} + 11\,q^9 - 19\,q^8 - 18\,q^7 + 18\,q^6,$

$[R_\kappa] = q^{20} + 4\,q^{19} + 10\,q^{18} + 18\,q^{17} + 25\,q^{16} + 28\,q^{15} + 25\,q^{14} + 18\,q^{13} + 10\,q^{12} + 4\,q^{11} + q^{10},$

$[\mathfrak{M}_\kappa] = q^5 + 4\,q^4 - 11\,q^3 + q^2 + 18\,q - 18.$

5. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_2)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_2, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{16} - 3\,q^{15} + 3\,q^{13} + 2\,q^{12} + 3\,q^{11} - 4\,q^{10} - 3\,q^9 - 3\,q^8 + 4\,q^6$
- $m_\kappa(\tau) = 1.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_2, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 1.$

$$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_2).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{10} + 2\,q^9 + 3\,q^8 + 3\,q^7 + 2\,q^6 + q^5$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_2, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 2\,q^{11} + 2\,q^{10} + q^9 - q^8 - 2\,q^7 - 2\,q^6 - q^5$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{17} - 3\,q^{16} + 2\,q^{15} + 2\,q^{14} - q^{13} + q^{12} - 5\,q^{11} + q^{10} + 2\,q^8 + 3\,q^7 - 3\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + 3\,q^{12} + 4\,q^{11} + 3\,q^{10} - 3\,q^8 - 4\,q^7 - 3\,q^6 - q^5$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + 2\,q^{12} + 2\,q^{11} + q^{10} - q^9 - 2\,q^8 - 2\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 1.$

$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2).$

- $[\mathcal{M}_\tau] = \left(q^2 - 1\right)^2.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 2\,q^{13} + q^{12} - q^{11} - 3\,q^{10} - 3\,q^9 - q^8 + q^7 + 2\,q^6 + q^5$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{17} - 4\,q^{16} + 3\,q^{15} + 3\,q^{14} - q^{13} + q^{12} - 7\,q^{11} + q^{10} + 3\,q^8 + 4\,q^7 - 4\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + q^{12} - q^{10} - 2\,q^9 - q^8 + q^6 + q^5$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2 - q\big)\big(q^2 - 1\big).$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 1.$

$$\xi = ((1,1),(1,1),(1,2)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^4 - q^3 - q^2 + q.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2).$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{17} - 3\,q^{16} + 2\,q^{15} + 2\,q^{14} - q^{13} + q^{12} - 5\,q^{11} + q^{10} + 2\,q^8 + 3\,q^7 - 3\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{13} - 2\,q^{12} - 2\,q^{11} + 2\,q^9 + 2\,q^8 + q^7 - q^6 - q^5$
- $m_\kappa(\tau) = 2$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^3 q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^3 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_2, \epsilon_1, \epsilon_2, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4.$

Total count of $\kappa = ((\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_2))$

$[R_\kappa^{\mathrm{red}}] = 6\,q^{17} + 3\,q^{16} + 13\,q^{15} + 17\,q^{14} + 11\,q^{13} + 14\,q^{12} + 5\,q^{10} + q^9 + q^8 + 5\,q^7 - 4\,q^6,$
$[R_\kappa^{\mathrm{irr}}] = q^{18} - 3\,q^{17} + 4\,q^{16} - 2\,q^{15} - 3\,q^{14} + 3\,q^{13} - 3\,q^{12} + 7\,q^{11} - 2\,q^{10} - q^8 - 5\,q^7 + 4\,q^6,$
$[R_\kappa] = q^{18} + 3\,q^{17} + 7\,q^{16} + 11\,q^{15} + 14\,q^{14} + 14\,q^{13} + 11\,q^{12} + 7\,q^{11} + 3\,q^{10} + q^9,$
$[\mathfrak{M}_\kappa] = q^3 - 3\,q^2 + 5\,q - 4.$

6. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_3)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_2, \epsilon_3, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12$.
- $[R(\tau)] = q^{18} + 5\,q^{17} - 5\,q^{16} - 13\,q^{15} + 3\,q^{14} + 12\,q^{13} + 17\,q^{12} + 4\,q^{11} - 16\,q^{10} - 17\,q^9 - 12\,q^8 + 9\,q^7 + 12\,q^6$
- $m_\kappa(\tau) = 1$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_2, \epsilon_1, \epsilon_1, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4$.
- $[R(\tau)] = q^{16} - 3\,q^{15} + 3\,q^{13} + 2\,q^{12} + 3\,q^{11} - 4\,q^{10} - 3\,q^9 - 3\,q^8 + 4\,q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,2),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + q^7 + q^6 + 2\,q^5$
- $m_\kappa(\tau) = 1.$

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{10} + 2\,q^9 + 3\,q^8 + 3\,q^7 + 2\,q^6 + q^5$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 1.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + 4\,q^{15} + q^{14} - 4\,q^{12} - 4\,q^{11} + q^{10} + 2\,q^9 + 5\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{17} - 2\,q^{15} - 4\,q^{14} - 3\,q^{13} + 2\,q^{12} + 5\,q^{11} + 6\,q^{10} + 2\,q^9 - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - 1.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + 2\,q^{12} + 3\,q^{11} + 2\,q^{10} - 2\,q^8 - 3\,q^7 - 2\,q^6 - q^5$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = q^3 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 3\,q^{14} + 5\,q^{13} + 5\,q^{12} + 2\,q^{11} - 2\,q^{10} - 5\,q^9 - 5\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12.$
- $[R(\tau)] = q^{19} + 4\,q^{18} - 10\,q^{17} - 8\,q^{16} + 16\,q^{15} + 9\,q^{14} + 5\,q^{13} - 13\,q^{12} - 20\,q^{11} - q^{10} + 5\,q^9 + 21\,q^8 + 3\,q^7 - 12\,q^6$
- $m_\kappa(\tau) = 1.$

$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + 4\,q^{15} + q^{14} - 4\,q^{12} - 4\,q^{11} + q^{10} + 2\,q^9 + 5\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - 3\,q^{13} - 3\,q^{12} - q^{11} + 3\,q^{10} + 5\,q^9 + 3\,q^8 - 3\,q^6 - 2\,q^5$
- $m_\kappa(\tau) = 1.$

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + 3\,q^{12} + 4\,q^{11} + 3\,q^{10} - 3\,q^8 - 4\,q^7 - 3\,q^6 - q^5$
- $m_\kappa(\tau) = 2.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_1, \epsilon_2).$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{13} + 2\,q^{12} + 2\,q^{11} + q^{10} - q^9 - 2\,q^8 - 2\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,2),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3).$

- $[\mathcal{M}_\tau] = q^4 - 1.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - q^{15} - q^{14} - 2\,q^{13} - 2\,q^{12} + 2\,q^{11} + 2\,q^{10} + 4\,q^9 + q^8 - q^7 - q^6 - 2\,q^5$
- $m_\kappa(\tau) = 1.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1).$

- $[\mathcal{M}_\tau] = q^3 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{17} - 2\,q^{15} - 4\,q^{14} - 3\,q^{13} + 2\,q^{12} + 5\,q^{11} + 6\,q^{10} + 2\,q^9 - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3).$

- $[\mathcal{M}_\tau] = \left(q^2 - 1\right)^2.$
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 2\,q^{13} + q^{12} - q^{11} - 3\,q^{10} - 3\,q^9 - q^8 + q^7 + 2\,q^6 + q^5$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_2, \epsilon_3, \epsilon_1, \epsilon_1).$

- $[\mathcal{M}_\tau] = \left(q^2 - 1\right)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 1.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q$.
- $[\mathcal{G}_\tau] = (q-1)^2 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4$.
- $[R(\tau)] = q^{18} - 3\,q^{17} - q^{16} + 6\,q^{15} + 2\,q^{14} - 6\,q^{12} - 6\,q^{11} + q^{10} + 3\,q^9 + 7\,q^8 - 4\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)\big(q^2-1\big)$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^3 - q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_3,\epsilon_2).$

- $[\mathcal{M}_\tau] = q^4 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{17} - 2\,q^{15} - 4\,q^{14} - 3\,q^{13} + 2\,q^{12} + 5\,q^{11} + 6\,q^{10} + 2\,q^9 - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 2\,q^{13} + q^{12} - q^{11} - 3\,q^{10} - 3\,q^9 - q^8 + q^7 + 2\,q^6 + q^5$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_3,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)\big(q^2-1\big).$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)\big(q^2-1\big).$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((1,1),(1,1),(1,2)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^4 - q^3 - q^2 + q$.
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 1$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,2),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q+1)(q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + 2\,q^{15} + q^{14} - q^{13} - 3\,q^{12} - 3\,q^{11} - q^{10} + q^9 + 2\,q^8 + q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + q^{15} - q^{13} - 2\,q^{12} - q^{11} + q^9 + q^8$
- $m_\kappa(\tau) = 4$.

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_3,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + q^{15} - q^{13} - 2\,q^{12} - q^{11} + q^9 + q^8$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + 2\,q^{15} + q^{14} - q^{13} - 3\,q^{12} - 3\,q^{11} - q^{10} + q^9 + 2\,q^8 + q^7$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = q^2 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12.$
- $[R(\tau)] = q^{19} + 4\,q^{18} - 10\,q^{17} - 8\,q^{16} + 16\,q^{15} + 9\,q^{14} + 5\,q^{13} - 13\,q^{12} - 20\,q^{11} - q^{10} + 5\,q^9 + 21\,q^8 + 3\,q^7 - 12\,q^6$
- $m_\kappa(\tau) = 1.$

$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + 4\,q^{15} + q^{14} - 4\,q^{12} - 4\,q^{11} + q^{10} + 2\,q^9 + 5\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + 4\,q^{15} + q^{14} - 4\,q^{12} - 4\,q^{11} + q^{10} + 2\,q^9 + 5\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = (q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^3$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)\big(q^2-1\big)$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 4\,q^{15} - 3\,q^{14} + 2\,q^{13} + 6\,q^{12} + 6\,q^{11} - 5\,q^9 - 6\,q^8 - 2\,q^7 + 3\,q^6 + 2\,q^5$
- $m_\kappa(\tau) = 1$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + q^{14} - q^{13} - 2\,q^{12} - 2\,q^{11} + 2\,q^9 + 2\,q^8 + q^7 - q^6 - q^5$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + q^{15} - q^{14} - 2\,q^{13} - 2\,q^{12} + 2\,q^{10} + 2\,q^9 + q^8 - q^7 - q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + q^{15} - q^{14} - 2\,q^{13} - 2\,q^{12} + 2\,q^{10} + 2\,q^9 + q^8 - q^7 - q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)\big(q^2-1\big).$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 2.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = (q-1)^3 q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^3 q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^3 q$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_2, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_1, \epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 4$.

Total count of $\kappa = ((\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_3))$

$[R_\kappa^{\mathrm{red}}] = 2\,q^{19} + 21\,q^{18} + 14\,q^{17} + 8\,q^{16} + 41\,q^{15} + 29\,q^{14} + 27\,q^{13} + 6\,q^{12} - 17\,q^{11} + q^{10} - 5\,q^9 + 22\,q^8 + 10\,q^7 - 15\,q^6$,

$[R_\kappa^{\mathrm{irr}}] = q^{20} + 2\,q^{19} - 11\,q^{18} + 4\,q^{17} + 17\,q^{16} - 13\,q^{15} - 4\,q^{14} - 9\,q^{13} + 4\,q^{12} + 21\,q^{11} + 5\,q^9 - 22\,q^8 - 10\,q^7 + 15\,q^6$,

$[R_\kappa] = q^{20} + 4\,q^{19} + 10\,q^{18} + 18\,q^{17} + 25\,q^{16} + 28\,q^{15} + 25\,q^{14} + 18\,q^{13} + 10\,q^{12} + 4\,q^{11} + q^{10}$,

$[\mathfrak{M}_\kappa] = q^5 + 2\,q^4 - 10\,q^3 + 7\,q^2 + 10\,q - 15$.

7. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 8$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_4, \epsilon_2).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12$.
- $[R(\tau)] = q^{18} + 5\,q^{17} - 5\,q^{16} - 13\,q^{15} + 3\,q^{14} + 12\,q^{13} + 17\,q^{12} + 4\,q^{11} - 16\,q^{10} - 17\,q^9 - 12\,q^8 + 9\,q^7 + 12\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_2, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4$.
- $[R(\tau)] = q^{16} - 3\,q^{15} + 3\,q^{13} + 2\,q^{12} + 3\,q^{11} - 4\,q^{10} - 3\,q^9 - 3\,q^8 + 4\,q^6$
- $m_\kappa(\tau) = 6$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_2, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 6$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 12$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{19} - 2\,q^{18} + q^{16} + 3\,q^{15} + 2\,q^{14} - 5\,q^{13} - 3\,q^{12} - 4\,q^{11} + 3\,q^{10} + 5\,q^9 + 2\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 8$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{17} - 2\,q^{15} - 4\,q^{14} - 3\,q^{13} + 2\,q^{12} + 5\,q^{11} + 6\,q^{10} + 2\,q^9 - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 3\,q^{14} + 5\,q^{13} + 5\,q^{12} + 2\,q^{11} - 2\,q^{10} - 5\,q^9 - 5\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^3 - q$.
- $[\mathcal{G}_\tau] = (q-1)^2 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12$.
- $[R(\tau)] = q^{20} + 5\,q^{19} - 6\,q^{18} - 18\,q^{17} + 8\,q^{16} + 25\,q^{15} + 14\,q^{14} - 8\,q^{13} - 33\,q^{12} - 21\,q^{11} + 4\,q^{10} + 26\,q^9 + 24\,q^8 - 9\,q^7 - 12\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^3 - q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^3 - q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 12$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$

- $[\mathcal{M}_\tau] = q^3 - q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^4 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{18} - 2\,q^{16} - 3\,q^{15} - 4\,q^{14} + 4\,q^{12} + 6\,q^{11} + 5\,q^{10} - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 6.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \left(q^2-1\right)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^4 - q.$
- $[\mathcal{G}_\tau] = (q-1)^2 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{19} - 3\,q^{18} + 2\,q^{16} + 5\,q^{15} + 3\,q^{14} - 7\,q^{13} - 5\,q^{12} - 6\,q^{11} + 4\,q^{10} + 7\,q^9 + 3\,q^8 - 4\,q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \left(q^2-q\right)\left(q^2-1\right).$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^4 - q.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{17} - 2\,q^{15} - 4\,q^{14} - 3\,q^{13} + 2\,q^{12} + 5\,q^{11} + 6\,q^{10} + 2\,q^9 - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)\big(q^2-1\big).$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 48.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_4,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{18} - 4\,q^{16} - 3\,q^{15} + 2\,q^{14} + 6\,q^{13} + 6\,q^{12} - 5\,q^{10} - 6\,q^9 - 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 6.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_4,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{17} + 2\,q^{16} + q^{15} - q^{14} - 3\,q^{13} - 3\,q^{12} - q^{11} + q^{10} + 2\,q^9 + q^8$
- $m_\kappa(\tau) = 24.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + q^{15} + q^{14} + 3\,q^{13} - q^{12} - q^{11} - 2\,q^{10} - q^9 + 2\,q^8$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + q^{15} - q^{13} - 2\,q^{12} - q^{11} + q^9 + q^8$
- $m_\kappa(\tau) = 48.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - q^{17} - 3\,q^{16} + 2\,q^{14} + 4\,q^{13} + 2\,q^{12} - 2\,q^{11} - 3\,q^{10} - 3\,q^9 + q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + 2\,q^{15} + q^{14} - q^{13} - 3\,q^{12} - 3\,q^{11} - q^{10} + q^9 + 2\,q^8 + q^7$
- $m_\kappa(\tau) = 48$.

$$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - q$.
- $[\mathcal{G}_\tau] = (q-1)^2 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12$.
- $[R(\tau)] = q^{20} + 5\,q^{19} - 6\,q^{18} - 18\,q^{17} + 8\,q^{16} + 25\,q^{15} + 14\,q^{14} - 8\,q^{13} - 33\,q^{12} - 21\,q^{11} + 4\,q^{10} + 26\,q^9 + 24\,q^8 - 9\,q^7 - 12\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_2,\epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{19} - 2\,q^{18} + q^{16} + 3\,q^{15} + 2\,q^{14} - 5\,q^{13} - 3\,q^{12} - 4\,q^{11} + 3\,q^{10} + 5\,q^9 + 2\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 8$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_4,\epsilon_2).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = (q-1)^3$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)\big(q^2-1\big)q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - q^{17} - 3\,q^{16} + 2\,q^{14} + 4\,q^{13} + 2\,q^{12} - 2\,q^{11} - 3\,q^{10} - 3\,q^9 + q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - 4\,q^{16} - 3\,q^{15} + 2\,q^{14} + 6\,q^{13} + 6\,q^{12} - 5\,q^{10} - 6\,q^9 - 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 12$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_4,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + q^{15} - q^{14} - 2\,q^{13} - 2\,q^{12} + 2\,q^{10} + 2\,q^9 + q^8 - q^7 - q^6$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{17} + q^{16} - q^{15} - 2\,q^{14} - 2\,q^{13} + 2\,q^{11} + 2\,q^{10} + q^9 - q^8 - q^7$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_4,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)\big(q^2-1\big)q$.
- $[\mathcal{G}_\tau] = (q-1)^3 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - q^{17} - 3\,q^{16} + 2\,q^{14} + 4\,q^{13} + 2\,q^{12} - 2\,q^{11} - 3\,q^{10} - 3\,q^9 + q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_4,\epsilon_2).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 48.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{18} - q^{17} - 3\,q^{16} + 2\,q^{14} + 4\,q^{13} + 2\,q^{12} - 2\,q^{11} - 3\,q^{10} - 3\,q^9 + q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 48.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_3,\epsilon_1,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-q\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^3 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + q^{15} + q^{14} + 3\,q^{13} - q^{12} - q^{11} - 2\,q^{10} - q^9 + 2\,q^8$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1), \quad \sigma_B = (\epsilon_3,\epsilon_4,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_3), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_2,\epsilon_4).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^3.$
- $[\mathcal{G}_\tau] = (q-1)^4 q.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 48.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_1, \epsilon_3, \epsilon_4, \epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^3$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 48$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_2, \epsilon_1, \epsilon_3, \epsilon_1), \quad \sigma_B = (\epsilon_3, \epsilon_1, \epsilon_4, \epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^3$.
- $[\mathcal{G}_\tau] = (q-1)^4 q$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 48$.

Total count of $\kappa = ((\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3), (\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4))$

$[R_\kappa^{\mathrm{red}}] = 8\,q^{20} + 68\,q^{19} + 56\,q^{18} - 4\,q^{17} + 2\,q^{16} + 78\,q^{15} + 102\,q^{14} + 46\,q^{13} - 20\,q^{12} - 92\,q^{11} - 38\,q^{10} + 30\,q^9 + 82\,q^8 + 18\,q^7 - 48\,q^6$,

$[R_\kappa^{\mathrm{irr}}] = q^{22} + 5\,q^{21} + 6\,q^{20} - 40\,q^{19} - 13\,q^{18} + 57\,q^{17} + 51\,q^{16} - 35\,q^{15} - 74\,q^{14} - 32\,q^{13} + 25\,q^{12} + 93\,q^{11} + 38\,q^{10} - 30\,q^9 - 82\,q^8 - 18\,q^7 + 48\,q^6$,

$[R_\kappa] = q^{22} + 5\,q^{21} + 14\,q^{20} + 28\,q^{19} + 43\,q^{18} + 53\,q^{17} + 53\,q^{16} + 43\,q^{15} + 28\,q^{14} + 14\,q^{13} + 5\,q^{12} + q^{11}$,

$[\mathfrak{M}_\kappa] = q^7 + 5\,q^6 + 7\,q^5 - 34\,q^4 + 34\,q^2 + 18\,q - 48$.

8. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_1, \varepsilon_1, \varepsilon_2)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 6.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_1, \epsilon_1, \epsilon_2).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = q - 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{17} - 3\,q^{16} + 2\,q^{15} + 2\,q^{14} - q^{13} + q^{12} - 5\,q^{11} + q^{10} + 2\,q^8 + 3\,q^7 - 3\,q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = q - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{15} - q^{14} - 2\,q^{13} - q^{12} + 3\,q^{10} + 2\,q^9 + q^8 - q^7 - 2\,q^6$
- $m_\kappa(\tau) = 12.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_1, \epsilon_1, \epsilon_2).$$

- $[\mathcal{M}_\tau] = q^3 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} + 3\,q^{14} + 5\,q^{13} + 5\,q^{12} + 2\,q^{11} - 2\,q^{10} - 5\,q^9 - 5\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 4.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q-1$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{13} + 2\,q^{12} + 2\,q^{11} + q^{10} - q^9 - 2\,q^8 - 2\,q^7 - q^6$
- $m_\kappa(\tau) = 12$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 6$.

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^2-1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 6$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 12$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 12$.

$$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_1,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q-1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{17} - 3\,q^{16} + 2\,q^{15} + 2\,q^{14} - q^{13} + q^{12} - 5\,q^{11} + q^{10} + 2\,q^8 + 3\,q^7 - 3\,q^6$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 4$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 12$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 12$.

Total count of $\kappa = ((\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4),(\varepsilon_1,\varepsilon_1,\varepsilon_1,\varepsilon_2))$

$[R_\kappa^{\mathrm{red}}] = 8\,q^{17} + 4\,q^{16} + 16\,q^{15} + 22\,q^{14} + 16\,q^{13} + 20\,q^{12} + 2\,q^{11} + 6\,q^{10} + 6\,q^7 - 4\,q^6,$
$[R_\kappa^{\mathrm{irr}}] = q^{18} - 4\,q^{17} + 5\,q^{16} - q^{15} - 3\,q^{14} + 3\,q^{13} - 5\,q^{12} + 7\,q^{11} - 2\,q^{10} + q^9 - 6\,q^7 + 4\,q^6,$
$[R_\kappa] = q^{18} + 4\,q^{17} + 9\,q^{16} + 15\,q^{15} + 19\,q^{14} + 19\,q^{13} + 15\,q^{12} + 9\,q^{11} + 4\,q^{10} + q^9,$
$[\mathfrak{M}_\kappa] = q^3 - 4\,q^2 + 6\,q - 4.$

9. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_2)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 8.$

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_2, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{16} - 3\,q^{15} + 3\,q^{13} + 2\,q^{12} + 3\,q^{11} - 4\,q^{10} - 3\,q^9 - 3\,q^8 + 4\,q^6$
- $m_\kappa(\tau) = 3.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_2, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 12.$

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2).$$

- $[\mathcal{M}_\tau] = 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 6.$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_2).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + 4\,q^{15} + q^{14} - 4\,q^{12} - 4\,q^{11} + q^{10} + 2\,q^9 + 5\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 8.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_2, \epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2).$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4.$
- $[R(\tau)] = q^{18} - 3\,q^{17} - q^{16} + 6\,q^{15} + 2\,q^{14} - 6\,q^{12} - 6\,q^{11} + q^{10} + 3\,q^9 + 7\,q^8 - 4\,q^6$
- $m_\kappa(\tau) = 6.$

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2).$

- $[\mathcal{M}_\tau] = \left(q^2 - 1\right)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 12.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{14} + q^{13} - q^{11} - 2\,q^{10} - q^9 + q^7 + q^6$
- $m_\kappa(\tau) = 24.$

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + q^{14} - q^{12} - 2\,q^{11} - q^{10} + q^8 + q^7$
- $m_\kappa(\tau) = 48$.

$$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2).$$

- $[\mathcal{M}_\tau] = q^2 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + 4\,q^{15} + q^{14} - 4\,q^{12} - 4\,q^{11} + q^{10} + 2\,q^9 + 5\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 8$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2).$$

- $[\mathcal{M}_\tau] = (q-1)^2 q$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + q^{15} - q^{14} - 2\,q^{13} - 2\,q^{12} + 2\,q^{10} + 2\,q^9 + q^8 - q^7 - q^6$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_2,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{17} - 2\,q^{16} - q^{15} + q^{14} + q^{13} + 3\,q^{12} - q^{11} - q^{10} - 2\,q^9 - q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^3 q.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 48.$

Total count of $\kappa = ((\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4),(\varepsilon_1,\varepsilon_1,\varepsilon_2,\varepsilon_2))$

$[R_\kappa^{\mathrm{red}}] = 22\,q^{18} + 22\,q^{17} + q^{16} + 39\,q^{15} + 28\,q^{14} + 25\,q^{13} + 16\,q^{12} - 21\,q^{11} + 4\,q^{10} - 11\,q^9 + 19\,q^8 + 18\,q^7 - 18\,q^6,$

$[R_\kappa^{\mathrm{irr}}] = q^{20} + 4\,q^{19} - 12\,q^{18} - 4\,q^{17} + 24\,q^{16} - 11\,q^{15} - 3\,q^{14} - 7\,q^{13} - 6\,q^{12} + 25\,q^{11} - 3\,q^{10} + 11\,q^9 - 19\,q^8 - 18\,q^7 + 18\,q^6,$

$[R_\kappa] = q^{20} + 4\,q^{19} + 10\,q^{18} + 18\,q^{17} + 25\,q^{16} + 28\,q^{15} + 25\,q^{14} + 18\,q^{13} + 10\,q^{12} + 4\,q^{11} + q^{10},$

$[\mathfrak{M}_\kappa] = q^5 + 4\,q^4 - 11\,q^3 + q^2 + 18\,q - 18.$

10. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_1, \varepsilon_2, \varepsilon_3)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{16} - 2\,q^{15} + 2\,q^{13} + q^{12} + 2\,q^{11} - 3\,q^{10} - 2\,q^9 - 2\,q^8 + 3\,q^6$
- $m_\kappa(\tau) = 8$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_2, \epsilon_3, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12$.
- $[R(\tau)] = q^{18} + 5\,q^{17} - 5\,q^{16} - 13\,q^{15} + 3\,q^{14} + 12\,q^{13} + 17\,q^{12} + 4\,q^{11} - 16\,q^{10} - 17\,q^9 - 12\,q^8 + 9\,q^7 + 12\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4$.
- $[R(\tau)] = q^{16} - 3\,q^{15} + 3\,q^{13} + 2\,q^{12} + 3\,q^{11} - 4\,q^{10} - 3\,q^9 - 3\,q^8 + 4\,q^6$
- $m_\kappa(\tau) = 6$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_2, \epsilon_3, \epsilon_1, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 6$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_1).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_1, \epsilon_2, \epsilon_3).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 12$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3$.
- $[R(\tau)] = q^{19} - 2\,q^{18} + q^{16} + 3\,q^{15} + 2\,q^{14} - 5\,q^{13} - 3\,q^{12} - 4\,q^{11} + 3\,q^{10} + 5\,q^9 + 2\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 8$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12$.
- $[R(\tau)] = q^{20} + 5\,q^{19} - 6\,q^{18} - 18\,q^{17} + 8\,q^{16} + 25\,q^{15} + 14\,q^{14} - 8\,q^{13} - 33\,q^{12} - 21\,q^{11} + 4\,q^{10} + 26\,q^9 + 24\,q^8 - 9\,q^7 - 12\,q^6$
- $m_\kappa(\tau) = 4$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 12$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{16} - 3\,q^{14} - 3\,q^{13} - q^{12} + 3\,q^{11} + 5\,q^{10} + 3\,q^9 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{17} - 2\,q^{15} - 4\,q^{14} - 3\,q^{13} + 2\,q^{12} + 5\,q^{11} + 6\,q^{10} + 2\,q^9 - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 3\,q^{14} + 5\,q^{13} + 5\,q^{12} + 2\,q^{11} - 2\,q^{10} - 5\,q^9 - 5\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^2 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{14} + 3\,q^{13} + 4\,q^{12} + 3\,q^{11} - 3\,q^9 - 4\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4$.
- $[R(\tau)] = q^{19} - 3\,q^{18} + 2\,q^{16} + 5\,q^{15} + 3\,q^{14} - 7\,q^{13} - 5\,q^{12} - 6\,q^{11} + 4\,q^{10} + 7\,q^9 + 3\,q^8 - 4\,q^6$
- $m_\kappa(\tau) = 12$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2 - 1\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{18} - 4\,q^{16} - 3\,q^{15} + 2\,q^{14} + 6\,q^{13} + 6\,q^{12} - 5\,q^{10} - 6\,q^9 - 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 6$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = \big(q^2 - 1\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$$

- $[\mathcal{M}_\tau] = q^4 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{18} - 2\,q^{16} - 3\,q^{15} - 4\,q^{14} + 4\,q^{12} + 6\,q^{11} + 5\,q^{10} - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 6$.

$$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{17} - 2\,q^{15} - 4\,q^{14} - 3\,q^{13} + 2\,q^{12} + 5\,q^{11} + 6\,q^{10} + 2\,q^9 - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 12$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 12$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 2\,q^{14} + q^{13} - q^{12} - 3\,q^{11} - 3\,q^{10} - q^9 + q^8 + 2\,q^7 + q^6$
- $m_\kappa(\tau) = 48$.

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - q^{17} - 3\,q^{16} + 2\,q^{14} + 4\,q^{13} + 2\,q^{12} - 2\,q^{11} - 3\,q^{10} - 3\,q^9 + q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^2q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + q^{15} + q^{14} + 3\,q^{13} - q^{12} - q^{11} - 2\,q^{10} - q^9 + 2\,q^8$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{17} + 2\,q^{16} + q^{15} - q^{14} - 3\,q^{13} - 3\,q^{12} - q^{11} + q^{10} + 2\,q^9 + q^8$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + 2\,q^{15} + q^{14} - q^{13} - 3\,q^{12} - 3\,q^{11} - q^{10} + q^9 + 2\,q^8 + q^7$
- $m_\kappa(\tau) = 48.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} + q^{15} - q^{13} - 2\,q^{12} - q^{11} + q^9 + q^8$
- $m_\kappa(\tau) = 48.$

$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = q^2 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12.$
- $[R(\tau)] = q^{20} + 5\,q^{19} - 6\,q^{18} - 18\,q^{17} + 8\,q^{16} + 25\,q^{15} + 14\,q^{14} - 8\,q^{13} - 33\,q^{12} - 21\,q^{11} + 4\,q^{10} + 26\,q^9 + 24\,q^8 - 9\,q^7 - 12\,q^6$
- $m_\kappa(\tau) = 4.$

$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = q^3 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 3\,q + 3.$
- $[R(\tau)] = q^{19} - 2\,q^{18} + q^{16} + 3\,q^{15} + 2\,q^{14} - 5\,q^{13} - 3\,q^{12} - 4\,q^{11} + 3\,q^{10} + 5\,q^9 + 2\,q^8 - 3\,q^6$
- $m_\kappa(\tau) = 8.$

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^2.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{16} - 2\,q^{15} - q^{14} + q^{13} + q^{12} + 3\,q^{11} - q^{10} - q^9 - 2\,q^8 - q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - q^{17} - 3\,q^{16} + 2\,q^{14} + 4\,q^{13} + 2\,q^{12} - 2\,q^{11} - 3\,q^{10} - 3\,q^9 + q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - q^{17} - 3\,q^{16} + 2\,q^{14} + 4\,q^{13} + 2\,q^{12} - 2\,q^{11} - 3\,q^{10} - 3\,q^9 + q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{18} - 4\,q^{16} - 3\,q^{15} + 2\,q^{14} + 6\,q^{13} + 6\,q^{12} - 5\,q^{10} - 6\,q^9 - 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 12$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 48$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + q^{15} - q^{14} - 2\,q^{13} - 2\,q^{12} + 2\,q^{10} + 2\,q^9 + q^8 - q^7 - q^6$
- $m_\kappa(\tau) = 24$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{17} + q^{16} - q^{15} - 2\,q^{14} - 2\,q^{13} + 2\,q^{11} + 2\,q^{10} + q^9 - q^8 - q^7$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{18} - q^{17} - 3\,q^{16} + 2\,q^{14} + 4\,q^{13} + 2\,q^{12} - 2\,q^{11} - 3\,q^{10} - 3\,q^9 + q^8 + 2\,q^7$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_1,\epsilon_3).$

- $[\mathcal{M}_\tau] = (q-1)^2 q^2.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2.$
- $[R(\tau)] = q^{18} - 2\,q^{17} - q^{16} + q^{15} + q^{14} + 3\,q^{13} - q^{12} - q^{11} - 2\,q^{10} - q^9 + 2\,q^8$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_3,\epsilon_1,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 24.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{16} - q^{14} - q^{13} - q^{12} + q^{11} + q^{10} + q^9 - q^7$
- $m_\kappa(\tau) = 48.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 48.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_3,\epsilon_1,\epsilon_2).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 48$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_2,\epsilon_1,\epsilon_3,\epsilon_1).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 48$.

Total count of $\kappa = ((\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4),(\varepsilon_1,\varepsilon_1,\varepsilon_2,\varepsilon_3))$

$[R_\kappa^{\mathrm{red}}] = 8\,q^{20} + 68\,q^{19} + 56\,q^{18} - 4\,q^{17} + 2\,q^{16} + 78\,q^{15} + 102\,q^{14} + 46\,q^{13} - 20\,q^{12} - 92\,q^{11} - 38\,q^{10} + 30\,q^9 + 82\,q^8 + 18\,q^7 - 48\,q^6$,

$[R_\kappa^{\mathrm{irr}}] = q^{22} + 5\,q^{21} + 6\,q^{20} - 40\,q^{19} - 13\,q^{18} + 57\,q^{17} + 51\,q^{16} - 35\,q^{15} - 74\,q^{14} - 32\,q^{13} + 25\,q^{12} + 93\,q^{11} + 38\,q^{10} - 30\,q^9 - 82\,q^8 - 18\,q^7 + 48\,q^6$,

$[R_\kappa] = q^{22} + 5\,q^{21} + 14\,q^{20} + 28\,q^{19} + 43\,q^{18} + 53\,q^{17} + 53\,q^{16} + 43\,q^{15} + 28\,q^{14} + 14\,q^{13} + 5\,q^{12} + q^{11}$,

$[\mathfrak{M}_\kappa] = q^7 + 5\,q^6 + 7\,q^5 - 34\,q^4 + 34\,q^2 + 18\,q - 48$.

11. Configuration $\boldsymbol{\epsilon} = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4)$ and $\boldsymbol{\varepsilon} = (\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4)$

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12$.
- $[R(\tau)] = q^{18} + 5\,q^{17} - 5\,q^{16} - 13\,q^{15} + 3\,q^{14} + 12\,q^{13} + 17\,q^{12} + 4\,q^{11} - 16\,q^{10} - 17\,q^9 - 12\,q^8 + 9\,q^7 + 12\,q^6$
- $m_\kappa(\tau) = 16$.

$$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4$.
- $[R(\tau)] = q^{16} - 3\,q^{15} + 3\,q^{13} + 2\,q^{12} + 3\,q^{11} - 4\,q^{10} - 3\,q^9 - 3\,q^8 + 4\,q^6$
- $m_\kappa(\tau) = 18$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{14} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 72$.

$$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = 1$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{12} + 3\,q^{11} + 5\,q^{10} + 6\,q^9 + 5\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 24$.

$$\xi = ((3,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12$.
- $[R(\tau)] = q^{21} + 5\,q^{20} - 5\,q^{19} - 14\,q^{18} - 2\,q^{17} + 17\,q^{16} + 30\,q^{15} + q^{14} - 28\,q^{13} - 34\,q^{12} - 16\,q^{11} + 25\,q^{10} + 29\,q^9 + 12\,q^8 - 9\,q^7 - 12\,q^6$
- $m_\kappa(\tau) = 16$.

$$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4), \quad \sigma_B = (\epsilon_1, \epsilon_2, \epsilon_3, \epsilon_4).$$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{17} - 2\,q^{15} - 4\,q^{14} - 3\,q^{13} + 2\,q^{12} + 5\,q^{11} + 6\,q^{10} + 2\,q^9 - 2\,q^8 - 3\,q^7 - 2\,q^6$

- $m_\kappa(\tau) = 144$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^3 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{15} + 3\,q^{14} + 5\,q^{13} + 5\,q^{12} + 2\,q^{11} - 2\,q^{10} - 5\,q^9 - 5\,q^8 - 3\,q^7 - q^6$
- $m_\kappa(\tau) = 96$.

$\xi = ((2,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^4 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^2$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^2 - 4\,q + 4$.
- $[R(\tau)] = q^{20} - 3\,q^{19} + 3\,q^{17} + q^{16} + 6\,q^{15} - 4\,q^{14} - 6\,q^{13} - 5\,q^{12} - 3\,q^{11} + 8\,q^{10} + 3\,q^9 + 3\,q^8 - 4\,q^6$
- $m_\kappa(\tau) = 36$.

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \left(q^2-1\right)^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{18} - 4\,q^{16} - 3\,q^{15} + 2\,q^{14} + 6\,q^{13} + 6\,q^{12} - 5\,q^{10} - 6\,q^9 - 2\,q^8 + 3\,q^7 + 2\,q^6$
- $m_\kappa(\tau) = 72$.

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^4 - 1$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{18} - 2\,q^{16} - 3\,q^{15} - 4\,q^{14} + 4\,q^{12} + 6\,q^{11} + 5\,q^{10} - 2\,q^8 - 3\,q^7 - 2\,q^6$
- $m_\kappa(\tau) = 72$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \left(q^2-1\right)^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{16} + 3\,q^{15} + 3\,q^{14} - 4\,q^{12} - 6\,q^{11} - 4\,q^{10} + 3\,q^8 + 3\,q^7 + q^6$
- $m_\kappa(\tau) = 144$.

$\xi = ((2,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \left(q^2-1\right)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2$.
- $[R(\tau)] = q^{19} - q^{18} - 3\,q^{17} + 2\,q^{15} + 4\,q^{14} + 2\,q^{13} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + q^9 + 2\,q^8$
- $m_\kappa(\tau) = 144$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{17} + 2\,q^{16} + q^{15} - q^{14} - 3\,q^{13} - 3\,q^{12} - q^{11} + q^{10} + 2\,q^9 + q^8$
- $m_\kappa(\tau) = 288.$

$\xi = ((1,1),(3,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = q^3 - 1.$
- $[\mathcal{G}_\tau] = (q-1)^2.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q^4 + 4\,q^3 - 9\,q^2 - 3\,q + 12.$
- $[R(\tau)] = q^{21} + 5\,q^{20} - 5\,q^{19} - 14\,q^{18} - 2\,q^{17} + 17\,q^{16} + 30\,q^{15} + q^{14} - 28\,q^{13} - 34\,q^{12} - 16\,q^{11} + 25\,q^{10} + 29\,q^9 + 12\,q^8 - 9\,q^7 - 12\,q^6$
- $m_\kappa(\tau) = 16.$

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1).$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{17} - q^{16} - 3\,q^{15} + 2\,q^{13} + 4\,q^{12} + 2\,q^{11} - 2\,q^{10} - 3\,q^9 - 3\,q^8 + q^7 + 2\,q^6$
- $m_\kappa(\tau) = 144.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = (q-1)^3.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{15} - q^{13} - q^{12} - q^{11} + q^{10} + q^9 + q^8 - q^6$
- $m_\kappa(\tau) = 96.$

$\xi = ((1,1),(2,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^3.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q - 2.$
- $[R(\tau)] = q^{19} - 4\,q^{17} - 3\,q^{16} + 2\,q^{15} + 6\,q^{14} + 6\,q^{13} - 5\,q^{11} - 6\,q^{10} - 2\,q^9 + 3\,q^8 + 2\,q^7$
- $m_\kappa(\tau) = 144.$

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)^2 q.$
- $[\mathcal{G}_\tau] = (q-1)^4.$
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1.$
- $[R(\tau)] = q^{17} + q^{16} - q^{15} - 2\,q^{14} - 2\,q^{13} + 2\,q^{11} + 2\,q^{10} + q^9 - q^8 - q^7$
- $m_\kappa(\tau) = 288.$

$\xi = ((1,1),(1,1),(2,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = \big(q^2-1\big)(q-1)q^2$.
- $[\mathcal{G}_\tau] = (q-1)^3$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = q-2$.
- $[R(\tau)] = q^{19} - q^{18} - 3\,q^{17} + 2\,q^{15} + 4\,q^{14} + 2\,q^{13} - 2\,q^{12} - 3\,q^{11} - 3\,q^{10} + q^9 + 2\,q^8$
- $m_\kappa(\tau) = 144$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^2$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{17} - q^{15} - q^{14} - q^{13} + q^{12} + q^{11} + q^{10} - q^8$
- $m_\kappa(\tau) = 288$.

$\xi = ((1,1),(1,1),(1,1),(1,1)), \quad \sigma_A = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4), \quad \sigma_B = (\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4).$

- $[\mathcal{M}_\tau] = (q-1)^3 q^3$.
- $[\mathcal{G}_\tau] = (q-1)^4$.
- $[\mathfrak{M}_\tau^{\mathrm{irr}}] = 1$.
- $[R(\tau)] = q^{18} - q^{16} - q^{15} - q^{14} + q^{13} + q^{12} + q^{11} - q^9$
- $m_\kappa(\tau) = 576$.

Total count of $\kappa = ((\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4),(\varepsilon_1,\varepsilon_2,\varepsilon_3,\varepsilon_4))$

$[R_\kappa^{\mathrm{red}}] = 32\,q^{21} + 196\,q^{20} + 164\,q^{19} - 164\,q^{17} - 58\,q^{16} + 386\,q^{15} + 296\,q^{14} + 94\,q^{13} - 264\,q^{12} - 406\,q^{11} - 8\,q^{10} + 182\,q^9 + 270\,q^8 - 144\,q^6,$

$[R_\kappa^{\mathrm{irr}}] = q^{24} + 6\,q^{23} + 19\,q^{22} + 10\,q^{21} - 125\,q^{20} - 68\,q^{19} + 106\,q^{18} + 260\,q^{17} + 129\,q^{16} - 344\,q^{15} - 277\,q^{14} - 88\,q^{13} + 265\,q^{12} + 406\,q^{11} + 8\,q^{10} - 182\,q^9 - 270\,q^8 + 144\,q^6,$

$[R_\kappa] = q^{24} + 6\,q^{23} + 19\,q^{22} + 42\,q^{21} + 71\,q^{20} + 96\,q^{19} + 106\,q^{18} + 96\,q^{17} + 71\,q^{16} + 42\,q^{15} + 19\,q^{14} + 6\,q^{13} + q^{12},$

$[\mathfrak{M}_\kappa] = q^9 + 6\,q^8 + 20\,q^7 + 17\,q^6 - 98\,q^5 - 26\,q^4 + 38\,q^3 + 126\,q^2 - 144.$

Summary

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_1,\epsilon_1,\epsilon_2),(\varepsilon_1,\varepsilon_2,\varepsilon_3,\varepsilon_4)}] = q^{18} - 4\,q^{17} + 5\,q^{16} - q^{15} - 3\,q^{14} + 3\,q^{13} - 5\,q^{12} + 7\,q^{11} - 2\,q^{10} + q^9 - 6\,q^7 + 4\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2),(\varepsilon_1,\varepsilon_1,\varepsilon_2,\varepsilon_2)}] = 0$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2),(\varepsilon_1,\varepsilon_1,\varepsilon_2,\varepsilon_3)}] = q^{18} - 3\,q^{17} + 4\,q^{16} - 2\,q^{15} - 3\,q^{14} + 3\,q^{13} - 3\,q^{12} + 7\,q^{11} - 2\,q^{10} - q^8 - 5\,q^7 + 4\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_2),(\varepsilon_1,\varepsilon_2,\varepsilon_3,\varepsilon_4)}] = q^{20} + 4\,q^{19} - 12\,q^{18} - 4\,q^{17} + 24\,q^{16} - 11\,q^{15} - 3\,q^{14} - 7\,q^{13} - 6\,q^{12} + 25\,q^{11} - 3\,q^{10} + 11\,q^9 - 19\,q^8 - 18\,q^7 + 18\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3),(\varepsilon_1,\varepsilon_1,\varepsilon_2,\varepsilon_2)}] = q^{18} - 3\,q^{17} + 4\,q^{16} - 2\,q^{15} - 3\,q^{14} + 3\,q^{13} - 3\,q^{12} + 7\,q^{11} - 2\,q^{10} - q^8 - 5\,q^7 + 4\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3),(\varepsilon_1,\varepsilon_1,\varepsilon_2,\varepsilon_3)}] = q^{20} + 2\,q^{19} - 11\,q^{18} + 4\,q^{17} + 17\,q^{16} - 13\,q^{15} - 4\,q^{14} - 9\,q^{13} + 4\,q^{12} + 21\,q^{11} + 5\,q^9 - 22\,q^8 - 10\,q^7 + 15\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_1,\epsilon_2,\epsilon_3),(\varepsilon_1,\varepsilon_2,\varepsilon_3,\varepsilon_4)}] = q^{22} + 5\,q^{21} + 6\,q^{20} - 40\,q^{19} - 13\,q^{18} + 57\,q^{17} + 51\,q^{16} - 35\,q^{15} - 74\,q^{14} - 32\,q^{13} + 25\,q^{12} + 93\,q^{11} + 38\,q^{10} - 30\,q^9 - 82\,q^8 - 18\,q^7 + 48\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4),(\varepsilon_1,\varepsilon_1,\varepsilon_1,\varepsilon_2)}] = q^{18} - 4\,q^{17} + 5\,q^{16} - q^{15} - 3\,q^{14} + 3\,q^{13} - 5\,q^{12} + 7\,q^{11} - 2\,q^{10} + q^9 - 6\,q^7 + 4\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4),(\varepsilon_1,\varepsilon_1,\varepsilon_2,\varepsilon_2)}] = q^{20} + 4\,q^{19} - 12\,q^{18} - 4\,q^{17} + 24\,q^{16} - 11\,q^{15} - 3\,q^{14} - 7\,q^{13} - 6\,q^{12} + 25\,q^{11} - 3\,q^{10} + 11\,q^9 - 19\,q^8 - 18\,q^7 + 18\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4),(\varepsilon_1,\varepsilon_1,\varepsilon_2,\varepsilon_3)}] = q^{22} + 5\,q^{21} + 6\,q^{20} - 40\,q^{19} - 13\,q^{18} + 57\,q^{17} + 51\,q^{16} - 35\,q^{15} - 74\,q^{14} - 32\,q^{13} + 25\,q^{12} + 93\,q^{11} + 38\,q^{10} - 30\,q^9 - 82\,q^8 - 18\,q^7 + 48\,q^6$.

$[R^{\mathrm{irr}}_{(\epsilon_1,\epsilon_2,\epsilon_3,\epsilon_4),(\varepsilon_1,\varepsilon_2,\varepsilon_3,\varepsilon_4)}] = q^{24} + 6\,q^{23} + 19\,q^{22} + 10\,q^{21} - 125\,q^{20} - 68\,q^{19} + 106\,q^{18} + 260\,q^{17} + 129\,q^{16} - 344\,q^{15} - 277\,q^{14} - 88\,q^{13} + 265\,q^{12} + 406\,q^{11} + 8\,q^{10} - 182\,q^9 - 270\,q^8 + 144\,q^6$.

Final result representations.

$[R^{\mathrm{irr}}_4] = (q^{20} + 4\,q^{19} - 12\,q^{18} - 4\,q^{17} + 24\,q^{16} - 11\,q^{15} - 3\,q^{14} - 7\,q^{13} - 6\,q^{12} + 25\,q^{11} - 3\,q^{10} + 11\,q^9 - 19\,q^8 - 18\,q^7 + 18\,q^6)C_{(1,1,1,1),(2,2)} + (q^{18} - 4\,q^{17} + 5\,q^{16} - q^{15} - 3\,q^{14} + 3\,q^{13} - 5\,q^{12} + 7\,q^{11} - 2\,q^{10} + q^9 - 6\,q^7 + 4\,q^6)C_{(1,1,1,1),(1,3)} + (q^{22} + 5\,q^{21} + 6\,q^{20} - 40\,q^{19} - 13\,q^{18} + 57\,q^{17} + 51\,q^{16} - 35\,q^{15} - 74\,q^{14} - 32\,q^{13} + 25\,q^{12} + 93\,q^{11} + 38\,q^{10} - 30\,q^9 - 82\,q^8 - 18\,q^7 + 48\,q^6)C_{(1,1,2),(1,1,1,1)} + (q^{22} + 5\,q^{21} + 6\,q^{20} - 40\,q^{19} - 13\,q^{18} + 57\,q^{17} + 51\,q^{16} - 35\,q^{15} - 74\,q^{14} - 32\,q^{13} + 25\,q^{12} + 93\,q^{11} + 38\,q^{10} - 30\,q^9 - 82\,q^8 - 18\,q^7 + 48\,q^6)C_{(1,1,1,1),(1,1,2)} + (q^{24} + 6\,q^{23} + 19\,q^{22} + 10\,q^{21} - 125\,q^{20} - 68\,q^{19} + 106\,q^{18} + 260\,q^{17} + 129\,q^{16} - 344\,q^{15} - 277\,q^{14} - 88\,q^{13} + 265\,q^{12} + 406\,q^{11} + 8\,q^{10} - 182\,q^9 - 270\,q^8 + 144\,q^6)C_{(1,1,1,1),(1,1,1,1)} + (q^{18} - 3\,q^{17} + 4\,q^{16} - 2\,q^{15} - 3\,q^{14} + 3\,q^{13} - 3\,q^{12} + 7\,q^{11} - 2\,q^{10} - q^8 - 5\,q^7 + 4\,q^6)C_{(2,2),(1,1,2)} + (q^{18} - 3\,q^{17} + 4\,q^{16} - 2\,q^{15} - 3\,q^{14} + 3\,q^{13} - 3\,q^{12} + 7\,q^{11} - 2\,q^{10} - q^8 - 5\,q^7 + 4\,q^6)C_{(1,1,2),(2,2)} + (q^{20} + 4\,q^{19} - 12\,q^{18} - 4\,q^{17} + 24\,q^{16} - 11\,q^{15} - 3\,q^{14} - 7\,q^{13} - 6\,q^{12} + 25\,q^{11} - 3\,q^{10} + 11\,q^9 - 19\,q^8 - 18\,q^7 + 18\,q^6)C_{(2,2),(1,1,1,1)} + (q^{18} - 4\,q^{17} + 5\,q^{16} - q^{15} - 3\,q^{14} + 3\,q^{13} - 5\,q^{12} + 7\,q^{11} - 2\,q^{10} + q^9 - 6\,q^7 + 4\,q^6)C_{(1,3),(1,1,1,1)} + (q^{20} + 2\,q^{19} - 11\,q^{18} + 4\,q^{17} + 17\,q^{16} - 13\,q^{15} - 4\,q^{14} - 9\,q^{13} + 4\,q^{12} + 21\,q^{11} + 5\,q^9 - 22\,q^8 - 10\,q^7 + 15\,q^6)C_{(1,1,2),(1,1,2)}$.

Final result characters.

$[\mathfrak{M}^{\mathrm{irr}}_4] = (q^5 + 4\,q^4 - 11\,q^3 + q^2 + 18\,q - 18)C_{(1,1,1,1),(2,2)} + (q^3 - 4\,q^2 + 6\,q - 4)C_{(1,1,1,1),(1,3)} + (q^7 + 5\,q^6 + 7\,q^5 - 34\,q^4 + 34\,q^2 + 18\,q - 48)C_{(1,1,2),(1,1,1,1)} + (q^7 + 5\,q^6 + 7\,q^5 - 34\,q^4 + 34\,q^2 + 18\,q - 48)C_{(1,1,1,1),(1,1,2)} + (q^9 + 6\,q^8 + 20\,q^7 + 17\,q^6 - 98\,q^5 - 26\,q^4 + 38\,q^3 + 126\,q^2 - 144)C_{(1,1,1,1),(1,1,1,1)} + (q^3 - 3\,q^2 + 5\,q - 4)C_{(2,2),(1,1,2)} + (q^3 - 3\,q^2 + 5\,q - 4)C_{(1,1,2),(2,2)} + (q^5 + 4\,q^4 - 11\,q^3 + q^2 + 18\,q - 18)C_{(2,2),(1,1,1,1)} + (q^3 - 4\,q^2 + 6\,q - 4)C_{(1,3),(1,1,1,1)} + (q^5 + 2\,q^4 - 10\,q^3 + 7\,q^2 + 10\,q - 15)C_{(1,1,2),(1,1,2)}$.

References

[1] Á. González-Prieto and V. Muñoz, *Motive of the* $\mathrm{SL}_4(\mathbb{C})$*-character variety of torus knots*, arXiv.