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Oblique parameters at next-to-leading order within electroweak strongly-coupled scenarios: constraining heavy resonances

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Abstract

The existence of a mass gap between Standard Model and possible New Physics states has been confirmed experimentally. As a consequence, effective field theories are appropriate to search for signals beyond the Standard Model. We consider a non-linear realization of the electroweak symmetry breaking, where the Higgs is a singlet with independent couplings and the Standard Model fields are coupled to bosonic heavy resonances with $J^P=0^pm$ and $J^P=1^pm$. By using this effective approach and a dispersive representation, we present a next-to-leading-order calculation of the S and T parameters. The assumption of a proper short-distance behavior is fundamental in order to find a result in terms of only a few resonance parameters. The experimentally allowed range of the S and T parameters constrain the resonances to be heavy enough, with masses above the TeV scale, $M_R gsim 3,$TeV, in good agreement with our previous estimations.

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