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Magnetised CGM Gas at $z \sim 1$ revealed by SPICE-RACS

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Abstract

Magnetic fields are expected to permeate the circumgalactic medium (CGM) of galaxies, yet direct constraints at high redshift remain limited by the lack of high-quality Faraday rotation measure (RM) data. Using the RMs from SPICE-RACS DR2 combined with the DESI DR1 quasar catalogue, we compile the largest sample to date of 2483 quasar sightlines with associated RMs, including 612 with intervening Mg II absorbers tracing foreground galaxies and 1871 control sightlines without Mg II absorbers. After subtracting the Galactic RM contribution and restricting the analysis to sightlines with low Milky Way HI column density and H α intensity, we obtain a foreground-cleaned sample of 757 quasars (191 Mg II / 566 control) spans over redshifts 0.13

