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# Constraining primordial magnetic fields with 21 cm line observations

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## Abstract

Primordial magnetic fields present since before decoupling have effects on the temperature anisotropies and polarization of the cosmic microwave background (CMB) as well as large scale structure.

Their effect on the linear matter power spectrum has implications for the 21 cm line signal. Using 21 cm intensity maps as well as cross correlations of the CMB Doppler mode and the 21 cm signal the prospects of constraining primordial cosmic magnetic fields are considered for LOFAR and SKAO.

The signal-over-noise ratios for different configurations and survey designs are presented for the cross correlations of the 21 cm line signal with the CMB for homogeneous and inhomogeneous reionization. In particular the latter in combination with SKA1-mid shows promising signal-over-noise ratios.

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