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Dark Matter-Baryon Scattering in Global 21cm Signal

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We compare several cosmological constraints on the cross section for elastic scattering between DM and baryons over a wide range of epochs in cosmological history. The result shows that given high-redshift constraints on DM-baryon scattering, long-range interactions for light DM would be sufficient to explain the deep 21cm absorption trough recently claimed by the EDGES experiment. For millicharged DM models proposed to explain the observation, where only a small fraction of the DM interacts, we estimate that a PIXIE-like future experiment measuring CMB spectral distortion could test the relevant parameter space.

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