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## Limits on intergalactic dust during reionization

*Monday, 8 May 2017 17:00 (30 minutes)*

We constrain the dust-to-gas ratio in the intergalactic medium (IGM) at high redshifts. We employ models for dust in the local universe to constrain the dust-to-gas ratio during the epoch of reionization at redshifts  $z \sim 6-10$ . The observed level of reddening of high redshift galaxies implies that the IGM was enriched to an intergalactic dust-to-gas ratio of less than 3% of the Milky Way value by a redshift of  $z=10$ .

We also show that infrared emission from intergalactic dust might compromise the ability of future experiments to detect subtle spectral distortions in the Cosmic Microwave Background (CMB) from the early universe. We provide the first estimate of foreground contamination of the CMB signal due to diffuse dust emission in the intergalactic medium. Using models of the extragalactic background light to calculate the intensity of IGM dust emission, we find that emission by intergalactic dust at  $z \gtrsim 0.5$  exceeds the sensitivity of the planned Primordial Inflation Explorer to CMB spectral distortions by 1-3 orders of magnitude.

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