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Constraining baryon retention in halos using FRBs

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Fast Radio Bursts (FRBs) are emerging as promising new probes of ionized matter in the cosmic web. FRB dispersion measures (DMs) inform us of the integrated line of sight electron density. In combination with identifying foreground structures through redshift surveys, FRB DMs can lay novel constraints on baryon distribution in the circumgalactic and intergalactic media (CGM and IGM). Hydrodynamical simulations of the universe with various feedback prescriptions have shown that dark matter halos only retain a fraction of their associated baryons within a few virial radii. In my talk, I will describe constraints that can be laid using localized FRB sightlines. Specifically, by identifying foreground halos along overdense sightlines in the NASA Extragalactic Database Local Volume Sample (NED-LVS), one can place upper limits on f_{gas} , the baryon fraction retained within one virial radius.

Presenter: SIMHA, Sunil