

THE INVISIBLE, LARGE RESERVOIRS OF GAS AROUND GALAXIES

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The Circumgalactic Medium (CGM), a diffuse gaseous component of galaxies bound to their dark matter halos and extending to 300 kpc, serves as a supply of material for future star formation and as the gutter for gas, metals, and dust expelled from the host galaxy. New observations with the Cosmic Origins Spectrograph on HST have revealed significant absorption from lower ionization states of heavy metals (e.g. SiII, SiIII, CII, CIII) in the CGM of L^* galaxies. In this talk, I will show the measurements and the subsequent analysis of these data that constrain the ionization state, metallicity, and ultimately, the total mass in the CGM. In this 10,000 K photo-ionized gas phase, we find that there is most likely enough mass in the CGM to close the missing baryon problem for dark matter halos on galactic scales.