The environments and wind-driving capabilities of Mg II absorbing galaxies at z> 0.7

Britt Lundgren*[1], Gabriel Brammer[2], John Chisholm[3], Varsha Kulkarni[4], Lorrie Straka[5], Christy Tremonti[6], Pieter Van Dokkum[7], David Wake[1], and Don York[8]

[1]University of North Carolina Asheville – United States
[2]Space Telescope Science Institute – United States
[3]University of Geneva – Switzerland
[4]University of South Carolina – United States
[5]Leiden Observatory – Netherlands
[6]University of Wisconsin Madison – United States
[7]Yale University – United States
[8]University of Chicago – United States

Abstract

Intervening absorption from singly-ionized Magnesium (Mg II) is understood to trace the stripping, accretion, and outflows of cold, enriched gas around galaxies from high redshift. Yet despite the tens of thousands of unique Mg II absorbers which have been mined to date from the SDSS quasar sample, their utility in galaxy evolution studies continues to be limited by the challenge of directly detecting their luminous counterparts at high redshifts and on small angular separations from the background quasars. I will present results from HST WFC3/IR imaging and grism observations of the fields surrounding the nine SDSS quasar sight lines with the highest frequency of uncorrelated foreground Mg II absorption at z> 0.7. We find that more than 90 percent of the absorbers can be spectroscopically matched to galaxies at the same redshift in the grism data. Measurements of the group environments, inclinations, and SFR surface densities for this sizable sample of absorbing galaxies, which are enabled by the slitless nature of the grism observations, provide compelling insights into the origins of Mg II absorption and the wind-driving potential of their host galaxies near the peak epoch of star formation.

*Speaker