

Shedding Light on Distant Galaxies with 200,000 Quasars

Dr. Britt Lundgren

University of Wisconsin–Madison

Tuesday, April 15 ♦ 12:30 P.M.

Room 184 Nieuwland Science Hall

Distant quasars backlight the Universe over most of cosmic time, revealing the evolving gas distribution of the cosmic web. Intervening metal absorption lines in quasar spectra can provide sensitive tracers of the gaseous processes regulating star formation in foreground galaxies to high redshift, but observational difficulties have traditionally limited comparisons to the stellar properties of the absorbing galaxies. The extraction and statistical analysis of absorption line systems from $\sim 200,000$ quasar spectra in the Sloan Digital Sky Survey (SDSS I-III) has recently catalyzed our understanding of the physical environments of the most prolific metal absorption species (e.g., Mg II, C IV) observed in optical quasar spectra. I will present recent stacking and clustering measurements made possible by the vast quasar absorption line samples from the SDSS, and present new, direct observations of Mg II absorber host galaxies at high redshift from the Hubble Space Telescope. Together these studies reveal compelling links between strong Mg II absorbers and large-scale star formation-driven outflows, providing insights into the role of feedback in the evolution of galaxies from $z \sim 2$.