Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Probing the Dark Matter-Galaxy Formation Connection with Lyman Alpha Emitting Galaxies[1] ERIC GAWISER, Rutgers University, MUSYC COLLABORATION — I will describe how our understanding of cosmological structure formation is used to probe the dark matter properties of high-redshift galaxies and to identify their present-day descendants. We studied the clustering properties and multiwavelength spectral energy distributions of a complete sample of 162 Lyman Alpha Emitting (LAE) galaxies at redshift $z = 3.1$ discovered in deep narrow-band imaging of the MUSYC survey. The LAEs exhibit a moderate clustering bias of $b = 1.7$, which implies median dark matter halo masses of 10^{11} $M_{\odot}$. The evolution of dark matter halo mass with redshift predicts that $z = 3.1$ LAEs evolve into typical present-day galaxies like the Milky Way, whereas other high-redshift galaxy populations, including Lyman Break Galaxies and Active Galactic Nuclei, typically evolve into more massive galaxies. Hence the Lyman Alpha Emitting galaxies that we have discovered represent our first direct knowledge of the progenitors of galaxies like the Milky Way seen when the universe was only 2 Gyr in age.
References: Gawiser et al. 2007 (Astrophysical Journal 671, 278), Francke et al. 2008 (Astrophysical Journal Letters 673, 13)

[1]We gratefully acknowledge support from NSF, DOE and NASA.

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Date submitted: 09 Jan 2009 Electronic form version 1.4