

Near Field Cosmology: Translating Galaxy Properties to Lyman-alpha and Lyman-continuum escape fractions ()

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We present our analyses of 39 selected star-forming low- to intermediate-mass low-redshift galaxies from the KISSR survey. These galaxies were selected as being representative in the local volume of the kinds of early galaxies that might have hosted the first stars, and span a range of galaxy properties (EWHA, reddening, metallicity, stellar mass). The KISSR systems contain a population, in appearance resembling "purple peas", with potentially steep UV slopes and high equivalent widths in H-alpha. Using archival GALEX data and theoretical models of radiation transport in dusty galaxies with clumpy gas media, we translate measurements of the UV slopes of these low-mass low-z KISSR galaxies to their escape fractions in Ly-alpha (LyA) and Ly-continuum (LyC) radiation, confirming a relationship between a galaxy's steep UV spectral slope and a significant (> 0.1) LyA escape fraction. This relationship is seen in existing data of low- to intermediate-mass galaxies in the local volume (please see accompanying poster by Pilon et al. at this meeting). We also translate measured LyA escape fractions in the literature for 14 LARS galaxies and a few dozen green pea galaxies to their LyC escape fractions using similar modeling. This work was supported by the University of San Francisco (USF) Faculty Development Fund, the USF Student Travel Fund, and by the Undergraduate ALFALFA Team through NSF grant AST-1637339.

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