

**Searching for Shocked Candidate LINERs in
Over-dense Regions of the Universe**

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Abstract: Recent Spitzer mid-IR spectroscopy observations of Hickson Compact Groups have identified galaxies which may show evidence for shocked molecular hydrogen. These galaxies lie generally in the NUV-opt "Green Valley", and are often classified through optical spectroscopy as LINERs. We are presently conducting optical and Herschel IFU spectroscopy to explore various mechanisms that might explain the strong H₂ emission including IGM/galaxy shocks, HI infall onto the galaxy, or AGN wind/ISM interactions. WFIRST, with its ability to both map large areas of sky photometrically, and through low-resolution rest-frame optical spectroscopy, will allow large surveys of the growth of overdense regions in the Universe between $1 < z < 2$. In particular, large numbers of low-luminosity AGN, including potentially shocked-induced galaxies which might appear as LINERs, can be correlated with galaxy overdensity. New deep radio continuum surveys of galaxies with SKA precursors (Jy-VLA, ASKAP/EMU and MeerKAT) should be available when WFIRST is launched, and these will aid in the process of mapping radio galaxy environments that are believed to form in the densest regions in the early Universe. Such areas of study, which explore how galaxies move from the blue cloud to the red-sequence by $z = 0$, will be a fruitful area of study with WFIRST.