

Exploring the CRAG: The Missing CGM of the ALFALFA Galaxies ()

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As part of our Survey of the Circumgalactic Regions of the ALFALFA Galaxies (CRAG), we report on the analysis of QSO sightlines that pass within ~ 100 kpc of ALFALFA galaxies that show no discernable evidence of a circumgalactic medium (CGM) as probed by the presence of Ly α absorption. Many of these corresponding galaxies reside in group or cluster environments, in agreement with recent studies that indicate the nearby galaxy environment plays a significant role in determining the physical conditions of the CGM. However, we also identify a sample of isolated ALFALFA galaxies that show no evidence of HI within ~ 100 kpc - suggesting the physical distribution of the CGM around these galaxies is patchy and non-uniform, even within relatively small volumes around the galaxies. We explore photometric, spectroscopic, and imaging observations from the Sloan Digital Sky Survey in an attempt to characterize the properties these galaxies and the environments in which they reside. This work has been supported by NSF grant AST-1716569.

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