Abstract Submitted
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Void Galaxy Properties Classified by Void Identification Algorithms[1] CYNTHIA OLVERA OLVERA PEREZ, California State University, Chico, KELLY DOUGLASS, SEGEV BENZVI, REGINA DEMINA, DYLAN VEYRAT, University of Rochester, UOR ASTRONOMY RESEARCH TEAM TEAM — The distant universe can be seen as a network of galaxies, a cosmic web, with clusters of galaxies connected together by thinner galaxy filaments, surrounding large, underdense voids. We analyze the Sloan Digital Sky Survey Data Release 7 where we study the properties of the galaxies located in voids. Voids affect galaxy formation because their underdense environments cause galaxies to begin forming stars much later in their life than galaxies in denser environments. There are two leading void identification algorithms: VoidFinder and ZOBOV. VoidFinder filters out faint and isolated galaxies in order to grow spheres in the empty regions. Voids are then defined as the union of these spheres. The filtered galaxies are reintroduced to the classified environments; galaxies located in a void are now considered void galaxies. ZOBOV is a watershed algorithm which filters out faint galaxies and calculates Voronoi cells for each remaining galaxy. The void galaxies are then defined as those with a cell volume greater than some threshold. We are interested in comparing how the two identification algorithms classify a void and how it changes the characteristics of a void galaxy. We compare the distributions of galaxy color, absolute magnitude, star formation rate, specific star formation rate, and inverse concentration index for those galaxies in voids defined by VoidFinder and those defined by ZOBOV. We find that VoidFinder void galaxies are bluer, fainter, have higher star formation rates and have higher inverse concentration indices than galaxies in denser regions. Conversely, void galaxies classified by ZOBOV are no different than galaxies in denser regions.

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