Tracing Cosmic Evolution with Void Galaxies
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BACKGROUND: Given the standard cosmological paradigm in which structure in the present-day universe formed through hierarchical clustering, galaxies in the currently most underdense regions, the cosmic voids, must be the least "evolved" ones, as they must have formed at later times than those in the dense regions. Void and cluster galaxies must therefore follow different evolutionary paths, that probe a distinct mix of "nature versus nurture" drivers (e.g., galaxy interactions) of the coevolution of galaxies and their central black holes. The void galaxies are then the arguably best test-bed for constraining the currently elusive coupling between the central accretion and star-formation activities, along with its cosmic evolution.

THIS WORK: We present an in depth optical (SDSS) + mid-IR (WISE) investigation of the void galaxies, with novel constraints for the previously proposed evolutionary sequence sequence HII \rightarrow Seyfert \rightarrow LINER \rightarrow Passive Galaxy. We investigate in which galaxies transform from star-forming via AGN to quiescence, along with possible concrete ways in which ALMA observations of key examples of void systems could be exploited to map more directly the galactic duty cycle and its environmental dependence.

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