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AGN Capture and Selection Bias in LSST

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The Vera C. Rubin Observatory is poised to generate an unparalleled dataset in terms of depth and sky coverage through its Legacy Survey of Space and Time (LSST). Understanding the selection criteria and biases for active galactic nuclei (AGNs) within such a dataset is crucial as the Rubin Observatory commences sciences operations. In this study, we investigate conventional broadband optical AGN selection techniques and assess their relevance to LSST data. We adopt a bolometric quasar luminosity function (QLF) and employ a template-based approach to simulate the spectral energy distributions (SEDs) of AGNs and their host galaxies across various redshifts to evaluate our capability to detect and recover objects with diverse intrinsic properties. Our modular approach facilitates the exploration of different QLFs, SEDs, and selection criteria, as well as rendering it well-suited for future time domain analyses.

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