Synthetic galaxy catalog for J-PAS

Surveys & instruments

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Determining accurate photometric redshifts using J-PAS data is one of the most crucial steps for several key science objectives of the collaboration. In order to check the accuracy of the diverse methods that can be used to that end, a comparison sample with associated spectroscopic redshifts is necessary. There are, however, only a limited number of galaxies for which such data is available in the miniJPAS field. In this work, we intend to develop a mock catalog of synthetic galaxies with realistic J-PAS photospectra and an associated "true" redshift, orders of magnitudes larger than the available spectroscopic catalog. We make use of the miniJ-PAS data and the DEEP-2 spectroscopic redshifts. We use the software CIGALE (Boquien et al. 2019) to fit the J-PAS SEDs of the spectroscopic sample to stellar population models. In order to produce realistic mock galaxies, we then generate synthetic models by introducing small variations on the best-fit parameters given by CIGALE (stellar age, extinction, metallicity, etc.), as well as photometric noise and redshift and mass variations. We consider luminosity functions from the literature in order to make our sample reproduce the expected amounts of different classes of galaxies. In this contribution we will present a preliminary mock catalog, along with some validation tests. Our final catalog will be released to the whole J-PAS community, as it can be useful in other projects beyond photometric redshift determination.