X03a   Investigations on the merger-AGN connection within the HSC-SSP

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Galaxy interactions and mergers are a fundamental process in the context of galaxy evolution, as they are considered to be connected to many processes related to galaxy evolution. One of such processes is active galactic nuclei (AGN) activity. When two galaxies interact and merge, gas inflows towards the central regions of the galaxies, which triggers accretion on to supermassive black holes and subsequent AGN ignition. However, quantitative conclusions on the significance of merger activity on triggering AGN activity are difficult to make, and previous studies have had conflicting results. In this work, we identify mergers and AGNs in HSC-SSP observations and investigate the relationship between mergers and AGNs. Mergers are identified using a machine learning framework, where a model pretrained on galaxy images (Zoobot, Walmsley et al. 2023) is fine-tuned using observation realistic synthetic images from the TNG simulations (Bottrell et al. 2023), and then used to make merger predictions on HSC observations (Omori et al. 2023). AGNs are identified based on the results of the full spectral fitting code PROSPECT (Robotham et al. 2020). We present the connections we find between mergers and AGNs, such as merger incidence among AGN hosts and non-AGN hosts, AGN incidence among mergers and non-mergers, and other findings.