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Star Formation and AGN Feedback in the Local Universe: Combining Radio Continuum and Integral Field Spectroscopy

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Supermassive black holes (SMBH) occupy the centers of massive galaxies and are identified as active galactic nuclei (AGN) during mass accretion events. AGN release an enormous amount of radiation across the electromagnetic spectrum, but the effect on an AGN host galaxy remains one of the key outstanding questions of galaxy evolution. In this work we investigate a sample of 468 local ($z < 0.15$) galaxies that host radio loud AGN (RLAGN) to understand the effects of AGN feedback on star formation. We combine the latest LOw Frequency ARray (LOFAR) Two-meter Sky Survey (LoTSS) data with data from the largest optical integral field spectroscopy (IFS) survey, Mapping Nearby Galaxies at APO (MaNGA) to disentangle radio emission from star-formation and from AGN activity. We construct a robust control sample by selecting non-active galaxies that match the stellar mass, redshift, visual morphology and inclination of the RLAGN host. We present maps of the gas excitation, ionized gas flux distributions, and star formation rate for RLAGN host galaxies and compare them to the non-active control galaxies. Our results will contribute to the understanding of the role of radio-mode AGN in galaxy evolution.