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TITLE: A Multi-Wavelength Analysis of Planetary Nebula NGC 3132 using MUSE, JWST and SPITZER data.
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ABSTRACT:
Integral field spectroscopy or imaging spectroscopy has been established as an important technique for the spatial analysis of extended ionized nebulae. MUSE data have been used to perform a two-dimensional spectroscopic analysis of PN NGC 3132. This particular planetary nebula was selected for the early observing phase of JWST and a multiple stellar system has been found with significant emission from molecular Hydrogen. JWST and archival Spitzer image data have also been combined to examine the radial distribution of various near-IR emission line ratios and IRAC colors. NGC 3132 is described by an average electron temperature 9500 K and electron density ranges from 500-900 cm^(-3). No variations in the chemical composition of the nebular gas were found. The radial analysis of optical and infrared lines has revealed a close link between the c(Hβ) and H2 emission lines. This suggests the presence of significant amount of dust that prevents the dissociation of molecular Hydrogen. The maps of the physico-chemical properties of the nebula are compared with the prediction of a 3D photoionization model in order to constrain its physical characteristics.