

Physical properties of the ionized gas for IC 342 using Integral Field Spectroscopy

In this study we use Integral Field Spectroscopic (IFS) observations for one of the closest galaxy to us, the grand design spiral IC342, to derive physical properties of HII regions at sub-kpc scales. This IFS data represents, to our knowledge, the most comprehensive observational effort in the optical for this galaxy. The final IFS datacube consists of 349 individual pointings using the IFS instrumentation from the SDSS-IV MaNGA survey. Using a prototype of the data analysis pipeline that will be devoted to the SDSS-V Local Volume Mapper (LVM) survey, we measure different observables from the emission line in the optical. In particular, using the flux map of the $\text{H}\alpha$ emission line, we derive the location and sizes of HII region candidates for IC342. Using the integrated flux for different emission lines within each region, we derived the radial distribution of different physical properties from the ionized gas (e.g., optical extinction, $\text{H}\alpha$ luminosity, oxygen abundance, etc). Comparing with larger samples of galaxies with IFS data, our results suggest that physical properties of the ionized gas of IC342 are similar to galaxies with similar stellar mass in the nearby universe.

Nivel de formación

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