

PhD project in ASTROPHYSICS

Title of the Project:

The Interstellar Medium as a tool for exploring galaxy evolution

Supervisors:

Viviana Casasola (INAF-IRA), Francesca Pozzi (UniBo), Francesco Calura

Abstract:

Observations of the interstellar medium (ISM) are key to deciphering the physical processes regulating star formation in galaxies, one of the main drivers of galaxy evolution. The ISM is composed of gas, dust, and the so-called ‘metals’ (helium and heavier elements). This PhD project aims at characterizing all components of the ISM in the galaxies of the Local Universe, where the proximity allows us to deeply explore the physics, the composition, and the distribution of the ISM. This information on ISM will be combined with those on other important galaxy properties such as stellar mass and star-formation rate. The project is based on multiwavelength (from UV to radio) images coming from big archives (e.g. DustPedia) and proprietary spectroscopic (Integral Field Units) data (e.g., Metal-THINGS Survey of Nearby Galaxies). This data comes from both ground-based and spatial telescopes (e.g., ALMA, Herschel, JVLA). Thanks to the holistic analysis of multi-wavelength data, this Thesis will draw a complete picture of how internal and external mechanisms can influence and affect galaxy evolution in nearby objects. The Thesis is in close collaboration with Prof. Jacopo Fritz of the Instituto de Radioastronomía y Astrofísica in Morelia, Mexico. Viviana Casasola and Jacopo Fritz are members of the DustPedia collaboration, and Jacopo Fritz is a member of the Metal-THINGS survey.

Contacts: Viviana Casasola (viviana.casasola@inaf.it), Francesca Pozzi (f.pozzi@unibo.it), Francesco Calura (francesco.calura@inaf.it)