

**Título/Title:**

Unveiling nebular emission in LEGA-C galaxies.

**Area:**

Astronomia/Astrofísica

**Orientador/Supervisor:**

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**Local do Estágio/Host Place:**

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**Descrição/Description:**

A complete picture of galaxies evolution has been in the last decades the main challenge of Astrophysics. One of the main problems is the limited information that we can extract from the analysis of the light received from a galaxy. This is related to the intrinsic nature of the observed light, which is a combination of emission due to stars, gas, and the material reprocessed by dust. To fully model this emission, we have to include all these mechanisms in a consistent framework. For example, the contribution due to the nebular emission, i.e. the ionized gas surrounding the star-forming regions, can rise up to 60% with respect to the total emission. However, despite this high fraction, most of the code to interpret the spectrum of a galaxy are 'purely stellar', assuming a negligible fraction of nebular emission. The University of Porto developed recently a tool for the interpretation of a spectrum in terms of a combination of stellar and nebular emission, FADO. The first tests, applied to the sample of nearby galaxies in SDSS, has shown promising results, allowing now the possibility to investigate the evolutionary trends of the stellar and nebular relative contribution to the total emission at younger epochs.

The goal of this project will be to investigate such components in higher redshift galaxies, taking into account an ESO large program (130 nights) conducted with VIMOS instrument on the Very Large Telescope: LEGA-C2 (<http://www.mpia.de/home/legac/>). The main goal of this project is to observe during long exposures a mass selected sample of galaxies in order to have a high signal to noise ratio data. In September 2018 the second data set has been released by the consortium, with about 2000 spectra available for the community. It seems clear that nebular emission is significantly more extinct than the stellar continuum in local star-forming galaxies, but at higher redshift in UV and Far Infrared selected galaxies the extinction is similar, while in similar galaxies selected in optical and Near Infrared the nebular emission seems to be more extinct. With such data set and applying the FADO analysis tool developed in Porto, the project will tackle the debated problem of the evolution of stellar and nebular emission at different galaxies epochs.