

Título/Title:

Spectrophotometric analysis of SDSS galaxies

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Descrição/Description:

One of the main open questions in Astronomy is the construction of a comprehensive theory of galaxy evolution. Beyond the theoretical limits driven by our ignorance, the reasons for this lack are also technical, because in Astrophysics the only method of investigation is to observe the electromagnetic radiation produced by the celestial objects. In this sense, the challenge is to build instruments with the deepest sensitivity, to collect light efficiently, and the highest spatial resolution, to pinpoint the details of the physical processes that we want to highlight.

However, with the current instrumentation available, most of the celestial objects are just a point, i.e. are unresolved. For these reasons there are two different approaches to the field of galaxy evolution:

- Unresolved approach, where a galaxy is just a point and we integrate the observed light to find scaling relations, determining the evolution of the observed galaxies as a whole;
- Resolved approach, where we enter into the details of the morphology of the galaxy. The main problem in this case is that we study the galaxies that are closer and we are not sure that such a sample is representative of the high redshift Universe, where galaxies were at different phases of their evolution.

The goal of this project is to investigate the correlation between resolved and unresolved galaxies focusing on two particular aspects of the problem: the dust to stellar mass ratio and the metallicity gradient.

We will investigate also the influence of the environment, and the flow of gas from the cosmic web, the so-called inflow/outflow mechanisms. Another aspect to investigate will be the relation between the age, the metal and the emission at Mid Infrared wavelengths, which is expected, but that has been recently questioned by different authors.