Título/Title:

AGN demography: a comparative study for different diagnostics

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Descrição/Description:

Many galaxy centers host supermassive black holes that become active (also known as Active Galactic Nuclei - AGN) for some periods during the galaxy's lifetime. This process is invasive and can dramatically change the evolution of the host and have important implications in models for galaxy formation and evolution. AGN phenomena are more common to galaxies in the early universe and have diverse observed properties that can be explained in most cases can be described by a single unified model. The unified model consists of a supermassive black hole with a superheated accretion disk that radiates in the optical through soft X-ray. The disk is surrounded by gas and a dusty torus can obscure all of these components if in the line-of-sight of the observer. From the observational point of view AGNs can be investigated at different wavelengths, from the X-rays to Radio regimes, including all intermediate frequencies - optical, infrared and millimetre- . The proper identification and characterization of AGNs can provide us with critical insights not only to accretion activity but galaxy evolution itself.

GOALS

In this project, we will focus our attention on two different AGN diagnostics:

• The so-called optical BPT diagram, which is a set of nebular emission line diagnostics used to distinguish the ionization mechanism of nebular gas.

• Mid-InfraRed (MIR) emission, because it is able to penetrate the obscuring dust that hides AGN at particular viewing angles in other wavelengths, making it a powerful tool in the search for AGN candidates.

The purpose of the project is to determine the efficacy of the different selection techniques, in order to understand their advantages and disadvantages and the existence of possible correlations. The properties of the selected AGN will be examined to refine current methods in the MIR to uncover obscured AGN.