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Poster

AGN FEEDBACK IN OPTICAL LINES: [O III] PROPERTIES IN FLAT-SPECTRUM RADIO QUASARS AND NARROW-LINE SEYFERT 1

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Blazars are a well-known class of active galactic nuclei (AGN) which harbors a relativistic jet pointed toward Earth, and source of electromagnetic emission from radio to γ rays. Blazars are divided into two classes, BL Lacertae objects (BL Lacs) and flat-spectrum radio quasars (FSRQs). This division, from a physical point of view, corresponds to an efficient accretion mechanism onto the black hole and a dense circumnuclear environment in FSRQs, and inefficient accretion and sparse environment in BL Lacs. The gas- and photon-rich environment of FSRQs produces prominent emission lines, very similar to those observed in other type 1 AGN. Finally, a third class of blazars is that of flat-spectrum radio-loud narrow-line Seyfert 1 (NLS1s). Identified as γ ray emitters after the launch of the Fermi Satellite, they are commonly believed to be a small-scale and low-power version of FSRQs.

One of the most prominent optical emission lines is the [O III]λ5007 line. This line can provide important information about the physics of the narrow-line region (NLR), and about its interaction with the relativistic jet. Usually, the [O III] line can be efficienly modeled with two gaussian components. The first one represents the line core, that is the ionized gas at the same redshift as the host galaxy. The second one, called blue wing, represents instead an outflow component. In some cases, the whole line is shifted toward lower wavelength by more than 150 km s^{-1}, indicating the presence of a bulk outflowing motion in the NLR. Such sources, known as blue outliers, are fairly common among NLS1s. But what about FSRQs?

To study the presence of blue outliers among FSRQs and the [O III] kinematics, we selected a sample of γ-ray FSRQs whose spectrum is included in the SDSS, and analyzed their optical spectra. We also compared the results with a similar study carried out on NLS1s. Our results show that the NLRs of FSRQs and NLS1s are significantly different. In particular, blue outliers are much more common among NLS1s. In this poster we will present this and other results of our analysis, and provide a physical explanation that accounts for the observed properties.