Invited Lecture

FEEDBACK IN THE CENTRAL PARSECS OF ACTIVE GALACTIC NUCLEI MAPPED FROM HIGH-IONIZATION LINES

A. Rodríguez-Ardila[1,*], A. Prieto[2], X. Mazzalay[3], J. A. Fernández-Ontiveros[2], D. May-Nicolazzi[1] and F. Müller-Sánchez[4]

[1] *Laboratório Nacional de Astrofísica*
[2] *Instituto deAstrofísica de Canarias*
[3] *Max-Planck-Institut für extraterrestrische Physik*
[4] *Department of Astrophysical and Planetary Sciences, University of Colorado*
[*] *E-mail: aardila@lna.br*

Apart from the classical broad line region (BLR) at small core distances, and the extended classical narrow-line region (NLR), a subset of active galactic nuclei (AGN) show, in their spectra, lines from very highly ionised atoms, known as Coronal lines (CLs). The precise nature and origin of these CLs remain uncertain. Adaptive optics imaging/spectroscopy in a few AGNs shows CLRs with sizes varying from ∼30 pc to ∼200 pc and aligned preferentially with the direction of the radio-jet. Here, we present results from a study aimed at unveiling the CLR in nearby AGNs. The excellent angular resolution of the data allowed us to map the extension of the coronal line gas and compare it to that emitting low- and mid-ionization lines. The very good match between the radio emission and the CLR suggest that at least part of the high-ionization gas is jet-driven. Photoionization models where the central engine is the only source of energy input strongly fail at reproducing the observed line ratios, mainly at distances larger than 60 pc from the centre. We discuss here other processes that should be at work to enhance this energetic emission and suggest that the presence of coronal lines in AGNs is an unambiguous signature of feedback processes in these sources. With a minimum number of assumptions, we derive mass outflow rates of tens of solar masses per year, comparable to those of powerful AGN. The result has strong implications in the global accounting of feedback mass and energy driven by low- to moderate- luminous AGNs into the medium and the corresponding galaxy evolution.