



# X-RAY ASTRONOMY 2019

*Current Challenges and New Frontiers in the Next Decade*

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## Relation between winds and jets in radio-loud AGN

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Accretion in active galactic nuclei (AGN) is accompanied by two modes of outflow: winds and jets. However, the connection between the winds, jets, and the accretion flows is not fully understood. I present the results of a recently-published paper (Mehdipour & Costantini 2019), where we have investigated the relation between the parameters of the ionised wind and the jet in a sample of radio-loud AGN. For this study we have carried out a systematic and homogeneous analysis of XMM-Newton spectra of a sample of radio-loud AGN. We discover a significant inverse correlation between the column density of the ionised wind and the power of the radio jet. We explore different possible explanations for this relation and find that ionisation, inclination, and luminosity effects are unlikely to be responsible. We show that the observed relation is rather a manifestation of the magnetic driving mechanism of the wind from the accretion disk. The results provide evidence for a wind-jet bimodality in radio-loud AGN and shine new light on the link between these two modes of outflow. I discuss the consequences of this finding for the accretion disk structure and the wind ejection mechanism. Finally, I talk about the future prospects for such wind-jet studies with the upcoming X-ray observatory ATHENA.

### Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

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