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Lorenzo Ulivi: Outflows and feedback in jetted AGN

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Traditionally, AGN feedback is thought to operate through either kinetically powerful (>10^45 erg/s), extended (10s kpc) jets or massive gas outflows. Recent observational work and simulations suggest that also low-power (<10^45 erg/s) jets may play an important role, but little is known about their actual effect on their host galaxies.
We aim to investigate the relationship between radio jets and host galaxies in order to identify a new potential mechanism of AGN feedback. We extended the seminal work by Venturi et al., 2021 that found a turbulent, high velocity dispersion gas in the direction perpendicular to low-radio jet emission, at higher jet luminosities. We selected four luminous type-II AGN with a moderate powerful radio jet (10^44 erg/s) observed with the Multi Unit Spectroscopic Explorer (MUSE) at the VLT, to analyze the properties of the extended ionized gas in these systems, employing the high spatial resolution of new generation integral field data. We detected ionized outflows extended over kiloparsec scales aligned with the direction of the jet. We also detected a strong enhancement in line-emission velocity dispersion perpendicular to the radio jets and found a correlation between the mass and the energetics of the high velocity dispersion gas and the power of the radio jet, supporting that jets may be responsible for the enhancement of turbulence and could represent a significant mechanism of AGN feedback in luminous sources. This phenomenon, being observed in a growing number of objects, could potentially represent an important additional channel of AGN feedback to be taken into account.