Contribution ID: **33** Type: **Contributed talk**

Feedback on ionised gas over the radio AGN life-cycle

Wednesday, 17 May 2023 11:45 (15 minutes)

Feedback from radio AGN has been observed in the form of jet driven gas outflows, which can affect the host galaxy's evolution. Radio AGN are also known to have a life-cycle of activity. However it is still not completely clear how feedback evolves with the AGN life-cycle. In the first part of my talk, I will discuss our results from a study to investigate this with a sample of uniformly selected 129 radio AGN up to z=0.2 and L(1.4 GHz)=1e26 W/Hz. We used radio spectral shape from 144-3000 MHz (LoTSS, FIRST, VLASS) as a proxy for the evolutionary stage of the AGN, and [OIII] spectra to trace the warm ionised gas kinematics. We found that outflows in young sources (peaked radio spectrum) were more extreme than evolved sources (non-peaked), and are typically short lived. This was true even if we included the [OIII] non-detections and used a stacking analysis, showing this is true on average for the radio AGN population. For candidate restarted AGN, we found tentative evidence for more disturbed gas kinematics, suggesting a link with episodic jet activity. We also found that radio luminosity, optical luminosity, ionisation state and accretion rate did not play a definitive role in driving feedback in our sample.

In the second part, I will discuss new results from an expansion of this study to ~5500 sources, up to z=0.8 and L(1.4 GHz)=1e28 W/Hz. Our findings support the picture from simulations where impact of feedback changes as the radio jets grow.

Primary authors: KUKRETI, Pranav (Kapteyn Astronomical Institute, and ASTRON); MORGANTI, Raffaella (ASTRON)

Presenter: KUKRETI, Pranav (Kapteyn Astronomical Institute, and ASTRON)

Session Classification: Plenary Session

Track Classification: Galaxy Evolution & Cosmology