

Discovery of a dominant new population of jet-mode AGN at high redshift

Tuesday, 7 May 2024 15:55 (15 minutes)

Active galactic nuclei (AGN) can have a significant effect on their host galaxies by regulating their growth or suppressing star formation (known as AGN feedback). Of particular importance for massive galaxies and clusters are jet-mode AGN which display powerful radio jets and keep galaxies 'red and dead' once quenched. However, until recently, the cosmic evolution of jet-mode AGN has remained largely unconstrained beyond $z \sim 1$. The LOFAR telescope has been undertaking one of the deepest wide-field radio continuum surveys to date: this represents a novel sample to statistically study the evolution of AGN activity and feedback across cosmic time. Using this sample, I will present the first robust measurement of jet-mode AGN feedback out to $z \sim 2.5$. We discover a new dominant population of jet-mode AGN hosted by star-forming galaxies at high redshifts, that has not been previously observed. We find that the bulk of the AGN heating output is performed by this new population in the early Universe, highlighting their importance in early galaxy evolution. I will also present a detailed analysis of the host galaxy properties which finds evidence that this new class of AGN within star-forming galaxies is fuelled by a different mechanism compared to their quiescent counterparts. These results showcase the power of deep wide-area radio continuum surveys in characterising the nature of the faint AGN population across cosmic time.

keywords

AGN; galaxy evolution

In-person or online?

in-person

Career level

ECR

Primary author: Dr KONDAPALLY, Rohit

Presenter: Dr KONDAPALLY, Rohit

Session Classification: AGN/ High-z