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Searching for fast outflows of cold gas at intermediate redshifts

Abstract

It is well established that AGN feedback plays a crucial role in the evolution of galaxies, but observational evidence of the physical properties of these feedback processes remains elusive. One such signature of feedback are fast outflows of cold gas observed in a number of powerful radio galaxies. The sensitivity of MeerKAT, combined with the wide frequency coverage on a radio-quiet site, means it is uniquely suited for searching for these outflows at intermediate redshifts where feedback processes are playing a critical role in quenching star-formation and transforming galaxies. This proposal requests 32.5 hrs in the UHF band to observe 14 sources with known 21-cm HI absorption lines to study the interaction between radio jets and the cold gas in galaxies, revealing how jets impact their environment at a critical point in the lifecycle of radio galaxies. These observations will shed light on how galaxies have evolved over the past 8 billion years and provide a much needed observational basis to inform future simulations of galaxy evolution.