

Constraining galaxy scaling relations with empirical distribution function modelling

Tuesday, 28 January 2025 09:20 (20 minutes)

Galaxy physical properties are not randomly scattered throughout a multi-dimensional parameter space, but instead follow distinct clustering ("scaling relations") that reflect their formation path and the associated astrophysical processes.

In this presentation I will describe two examples - both relevant to science with SKA-MID - of how these inter-relations between different galaxy properties can be constrained via empirical population modelling, starting from the galaxy stellar mass distribution: (i) the link between galaxy star-formation rate and radio continuum luminosity, and (ii) the relation between the brightness of emission from the molecular gas tracer carbon monoxide (CO) and the galaxy gas-phase metallicity.

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Session Classification: Precursor Science & AstroSignal