

Panchromatic characterisation of accreting black holes in dusty star-forming galaxies

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Abstract. Although AGN do not typically dominate the bolometric emission of dusty star forming galaxies, large AGN fractions (sometimes $> 40\%$) have been observed in various sub-millimeter surveys. These diagnostics have been however mostly based on X-ray counterpart selections and a complete multiwavelength census of the fraction of AGN hosts is needed. I will present new advances in the modelling of panchromatic spectral energy distributions (SEDs) of active galactic nuclei (AGN), based on our publicly available code AGNfitter (Calistro-Rivera *et al.* 2016). AGNfitter implements a fully Bayesian Markov Chain Monte Carlo method to fit the spectral energy distributions of AGNs pushing the wavelengths frontiers from the radio to the X-rays. I will present a recent application of AGNfitter on dusty star forming galaxies in the ALESS sub-millimeter survey to obtain an unbiased multiwavelength characterisation of the nuclear activity buried in dusty star formation. Our method reveals a significantly larger contribution of AGN activity to the emission in these galaxies than previously observed based on X-rays diagnostics. Our method represents a unique tool to potentially characterise an unbiased accretion history of the Universe when applied to larger populations of star-forming galaxies.

Keywords. galaxies: active, galaxies: spectral energy distributions, galaxies: star formation

Reference

Calistro-Rivera, G., *et al.* 2016, *ApJ*, 833, 98