Finding early radio galaxies: the IR perspective

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Abstract

Today, it is expected that super-massive black holes and the respective hosts have closely co-evolved throughout cosmic time, based on a variety of evidences, such as the black-hole mass versus stellar dispersion relation (Gültekin et al.2009, McConnel & Ma 2013). Attempting to understand the initial conditions and primeval stages of such co-evolution forces one to search ever deeper into the faint Universe in search for early active galactic nuclei (AGN) sources. Or maybe not.. Given the current depths of radio surveys, one should expect already the detection of the brightest AGN up to redshifts of 7 or beyond. Nevertheless, we do not seem to find them. In fact, these sources may have been detected already, but are extremely difficult to identify. Although the radio spectral range has the advantage of not being affected by dust-extinct (as opposed to UV-to-near-IR high-redshift surveys), generally on its own, it does not provide a way to know how far from us a given source is. This work explores IR-selection criteria of high-redshift sources or optically-faint AGN sources (far-IR risers, Dowell et al.2014, or KI-AGN, Messias et al.2012) cross-matched with existing deep radio-surveys in order to identify early radio galaxies. This presentation will show the first results of this large quest (including HerMES, VIKING, SERVS, and other wide-field surveys), such as identification strategies, number statistics, photometric analysis, and (on a best-effort basis) distance measurements.