Talk at Splinter Meeting

Splinter L

Implications for the growth of supermassive black holes across optical emission line diagrams

M. Zajaček[1,2,3], A. Eckart[1,2], L. Fuhrmann[2], S. Britzen[2], M. Vitale[1],
A. Zensus[2,1]

[1] *I. Physikalisches Institut der Universität zu Köln, Zülpicher Strasse 77, D-50937 Köln, Germany*
[2] *Max-Planck-Institut für Radioastronomie (MPIfR), Auf dem Hügel 69, D-53121 Bonn, Germany*
[3] *Astronomical Institute, Academy of Sciences, Boční II 1401, CZ-14131 Prague*

In a previous study to understand the role of AGN feedback in galaxy evolution we performed a spectral index study of a sample of 119 intermediate redshift SDSS-FIRST sources with the Effelsberg 100-m telescope at 4.85 and 10.45 GHz (see Vitale et al., 2015). The sample included star-forming galaxies, composite galaxies, Seyferts and LINER galaxies obeying a flux density limit of ≥ 100 mJy at 1.4 GHz. While searching for possible spectral evolution and a link between the radio/optical emission we found indications for radio spectral index flattening in high-metallicity star-forming galaxies, composite galaxies and Seyferts. Galaxies of this "flattening sequence" along the [NII]-based emission line diagnostic diagrams are likely transitioning from the active star-forming galaxies (blue cloud) to the passive elliptical galaxies (red sequence) suggesting that AGN play a key role in quenching star formation as well as galaxy evolution as a whole. Currently we are extending our previous findings on the grounds of a much larger sample with lower radio flux densities of ≥ 10 mJy. Here, we will present first results of this follow-up Effelsberg observations for a sample of about 400 additional sources. A special focus is on the distribution of supermassive black hole masses across optical emission line diagrams, where I will discuss implications for their growth evolution. A link between black hole growth and the evolution of the host is expected, since the black hole accretion and star-formation are triggered by the same material.