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A low-luminosity type-1 QSO sample: Insight from integral-field spectroscopy

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Abstract. The properties of the host galaxies of quasi-stellar objects (QSOs) are essential for the understanding of the suspected coevolution of central supermassive black holes (BHs) and their host galaxies. In Busch et al. (2014), we present a study of 20 low-luminosity type-1 QSOs (LLQSO; Busch et al. 2012) that have been selected from the Hamburg/ESO survey for bright UV-excess QSOs ($z \leqslant 0.06$). Performing careful decomposition of deep near-infrared J,H,K images, we found that the observed sources do not follow published $M_{\rm BH} - L_{\rm bulge}$ relations for inactive galaxies, supporting similar results found for type-1 AGN in the optical. This can be explained by overluminous bulges with very young stellar populations or undermassive black holes that are observed in a phase of growth. We use 3d-spectroscopy in the optical and near-infrared as a powerful tool to analyze gas and stellar kinematics, determine gas masses, star formation rate, trace underlying stellar continuum, etc. (e.g., Smajić et al. 2014) and thereby constrain possible evolution scenarios. The results will be interpreted in the context of galaxy evolution and particularly the still unknown role of the AGN in this process. Here, we show first results for HE 1029-1831.

Keywords. galaxies: active - galaxies: Seyfert - galaxies: evolution

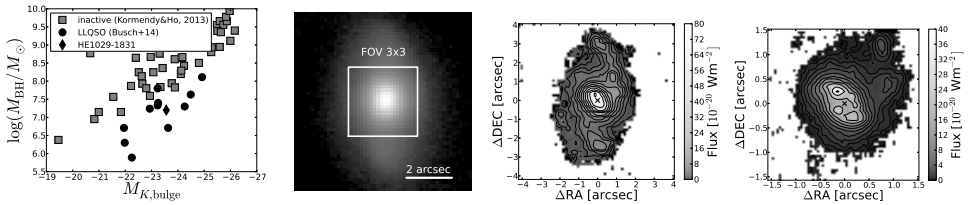

Figure 1. *From left to right:* (1) In the $M_{\rm BH} - L_{\rm bulge}$ relation, the observed LLQSOs clearly lie offset compared to inactive galaxies collected by Kormendy & Ho (2013) (see Busch et al. 2014). (2) K-band image of the LLQSO HE 1029-1831 from Fischer et al. (2006). (3) Paα map of HE 1029-1831 with a FOV of 8×8 arcsec^2. (4) the same with FOV of 3×3 arcsec^2. The atomic gas is distributed in spiral arms and a clumpy circum-nuclear ring, indicating star formation. This motivates further investigation of the star formation properties in the centers of LLQSOs.

References

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