Co-Evolution of Central Black Holes and Galaxies
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Integral Field Spectroscopy of $z \sim 0.1$ QSO Host Galaxies

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We observed a volume-limited sample of 19 luminous type 1 QSO host galaxies at $M_V \sim -23$ mag and redshift $0.06 < z < 0.2$ (Jahnke *et al.* 2004) using the VLT/VIMOS Integral Field Spectrograph. After removal of the QSO contribution (using the method of Husemann *et al.* 2008), we construct 2D intensity maps and gas velocity fields of the host galaxies in the Hα and [O III] emission lines. Two representative cases are shown in Figure 1.

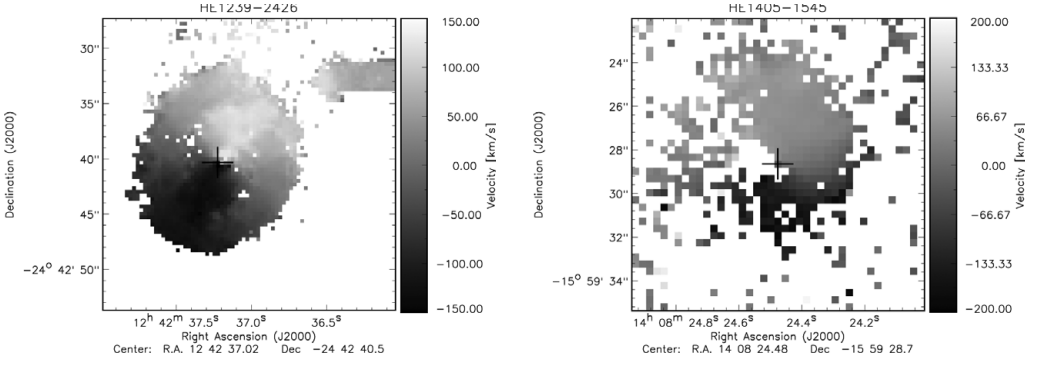

Figure 1. A cross in each figure represents position of the QSO. The white regions near the QSO position mark regions of no data due to low S/N or too-strong QSO residuals. *Left:* The Hα velocity field for HE 1239−2426, a spiral galaxy at $z = 0.082$. The velocity field shows disk rotation profile, velocity increasing in the inner regions and becoming flat in the outer regions. A northwestern companion is also detected in Hα. *Right:* The [O III] velocity field for HE 1405−1545, a disk galaxy at $z = 0.194$, shows two prominent tidal features. The northern part is redshifted with respect to the systemic velocity, while the southern part is blueshifted and shows a higher velocity offset relative to the systemic velocity compared to the northern part.

We find that the velocity fields of our QSO host galaxies range from perfectly regular to very distorted. The irregularites can be explained by interaction processes or distortion by inflows or outflows. With the detailed analysis of kinematical properties still ongoing, we can already conclude from the existence of complete undisturbed velocity fields that major merging cannot be the dominant fueling mechanism for these QSOs.

References

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