



# Integral field spectroscopy of $z \sim 0.1$ QSOs host galaxies



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Emmy Noether-Group on Galaxy-Black Hole Coevolution  
MPIA Heidelberg, [www.mpia.de/coevolution](http://www.mpia.de/coevolution)

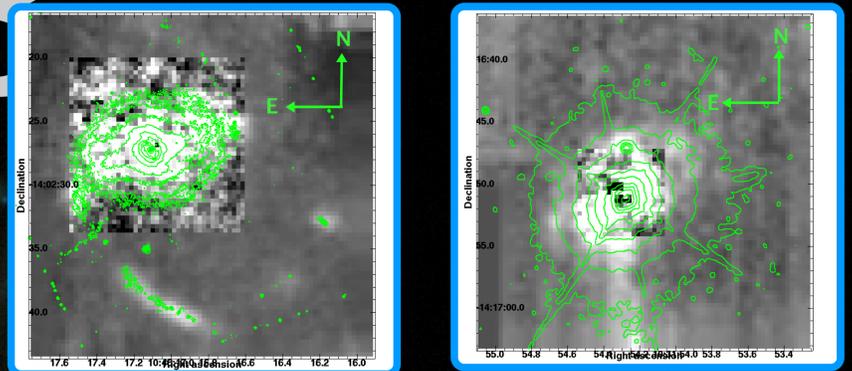
## 0 Summary

We present initial results from an ongoing study of the host galaxies of 19 luminous quasars at redshift  $0.06 < z < 0.2$  which we observed using VLT/VIMOS Integral Field Spectroscopy covering the region of  $H\beta$  to  $[SII]$ . In particular, we report on two representative cases, is a barred spiral quasar host galaxy (HE 1043-1346) and an elliptical host galaxy (HE 1029-1401).

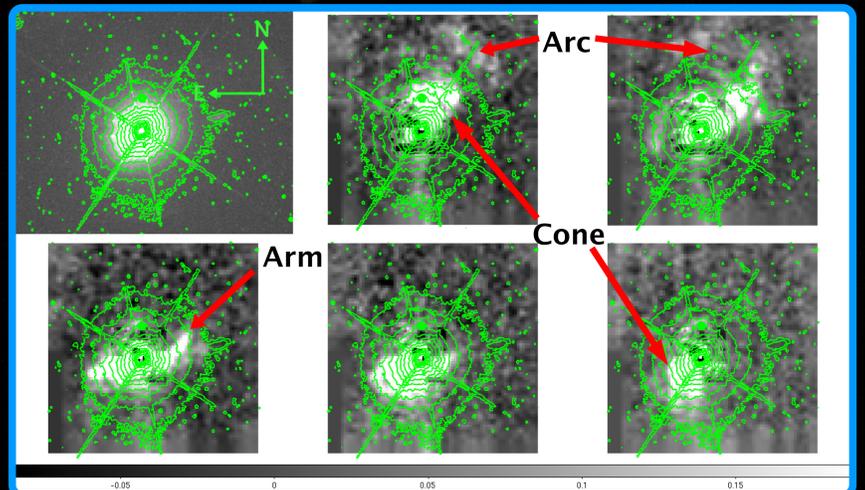
## 1 Introduction

Major and minor galaxy mergers have been proposed to trigger the nuclear activity especially in high luminosity Active Galactic Nuclei (AGN), but the lack of large-scale distortion of lower-luminosity AGN host galaxies suggests other fueling mechanisms at the low mass end. **The aim of this study is to investigate the kinematics of host galaxies and to try to differentiate between merger signatures and outflows. We also plan to investigate the composition and age of the stellar populations to connect a recent merger events, that potentially induced star-formation, and the onset of QSO activity.**

## 3 Results: intensity maps



The gray-scaled image (left panel) is an  $H\alpha$  narrow band image of HE1043-1346, a barred spiral galaxy, constructed from our 3D data cube. Overlaid are logarithmic surface brightness contours from an HST image. Right panel:  $[OIII] \lambda 5007$  narrow band image constructed from the data cube of HE1029-1401, again with surface brightness contours from HST imaging overlaid.



First panel shows contour of surface brightness which will be used on the following panels. The other five panels are subsequent image of  $[OIII] 5007$  emission with radial velocity approximately  $-158.0, -93.3, +36.0, +100.7, +165.4$  km/s in clockwise direction. Prominent structures also indicated by red arrows.

## 4 Take-home message

We observe structure on the gas distribution of elliptical QSO host galaxies. The gas velocity field observed for QSO host galaxies can be much more complex and distorted than expected from the smooth appearance of a QSO on images. The early type QSO host of HE1029-1401 indicates a possible tidal interaction or outflow from inner region (Husemann et al. 2009). Our upcoming population study will try to connect population ages with triggers for the AGN activity and distorted velocity field.

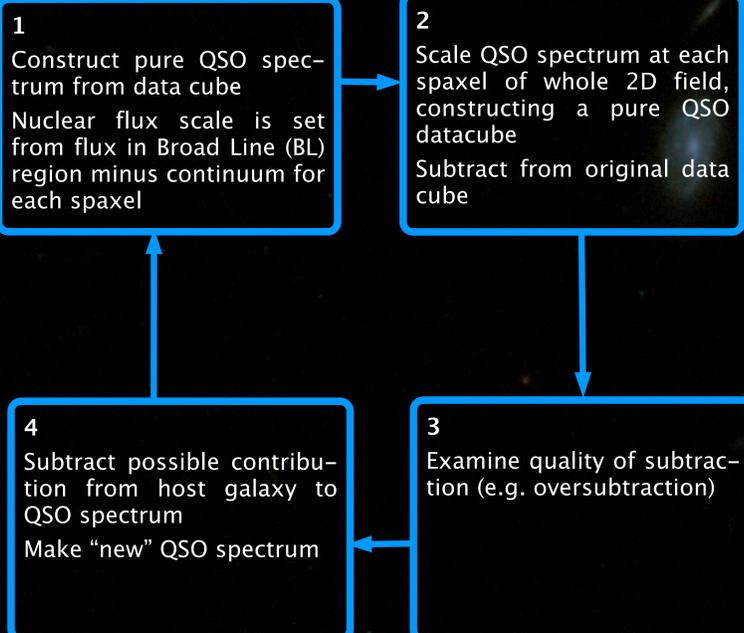
## 5 References

- Christensen et al. 2006, A&A, 459, 717
- Husemann et al. 2008, A&A, 488, 145
- Husemann et al. 2009, in preparation
- Jahnke et al. 2004, MNRAS, 352, 399

## 2 Data and measurements

We use a statistically complete, flux-limited sample from the Hamburg/ESO Survey, consisting of 19 type 1 QSOs. Morphologies range from disk dominated to spheroids and also dynamical states from isolated to interacting galaxies (Jahnke et al. 2004).

For analysis of the host galaxy, we have to subtract out the QSO contribution, following the method by Christensen et al. (2006) and Husemann et al. (2008):



Iterate until convergence of QSO flux is achieved.

## Acknowledgements

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