

The relation between the radio jet and the near-IR line emission in Seyfert galaxies

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Abstract. We used near-IR integral field spectroscopy, obtained with Gemini NIFS and GNIRS integral field units (IFUs), to map the ionized and molecular flux distributions and kinematics in the central few hundreds of parsecs of Seyfert galaxies. We conclude that the molecular gas emission can be considered a tracer of the feeding of the AGN, while the emission of the ionized gas a tracer of its feedback.

Keywords. galaxies: Seyfert, galaxies: jets, galaxies: kinematics and dynamics

1. Observations and Data Reduction

In this work we present two-dimensional maps for fluxes and velocity dispersion (σ) covering the inner hundreds of parsecs of the Seyfert galaxies ESO 428-G14, Mrk 1066 and NGC 591. These maps were constructed from J and K-band observations obtained using GNIRS-IFU (for ESO 428-G14) and NIFS (for Mrk 1066 and NGC 591) on Gemini telescopes. The data reduction was done using the software IRAF and followed the standard procedure. See Riffel *et al.* (2006, 2010) for more details.

2. Results and Conclusions

In Fig. 1 we present two-dimensional maps for the flux and σ obtained from the fitting of the H₂ 2.12 μ m, Pa β and [Fe II] 1.25 μ m emission-line profiles. These maps show a tight relation between the ionized gas emission-line flux distributions and kinematics and the radio structure (thick contours), revealing that the radio jet plays a fundamental role not only in shaping the narrow-line region but also in the imprint of its kinematics. Moreover, the H₂ maps show only a weak correlation with the radio structure, suggesting that the radio jet is less important for the warm H₂ emission than for the emission of ionized gas.

We conclude that the molecular and ionized gas present distinct flux distributions and kinematics, with the former more restricted to the plane of the galaxies and the latter extending to high latitudes above it, being more associated with the radio emission. This conclusion is in good agreement with those found for other Seyfert galaxies and suggest that the molecular gas is a tracer of the feeding of the AGN and the ionized gas a tracer of its feedback.

References

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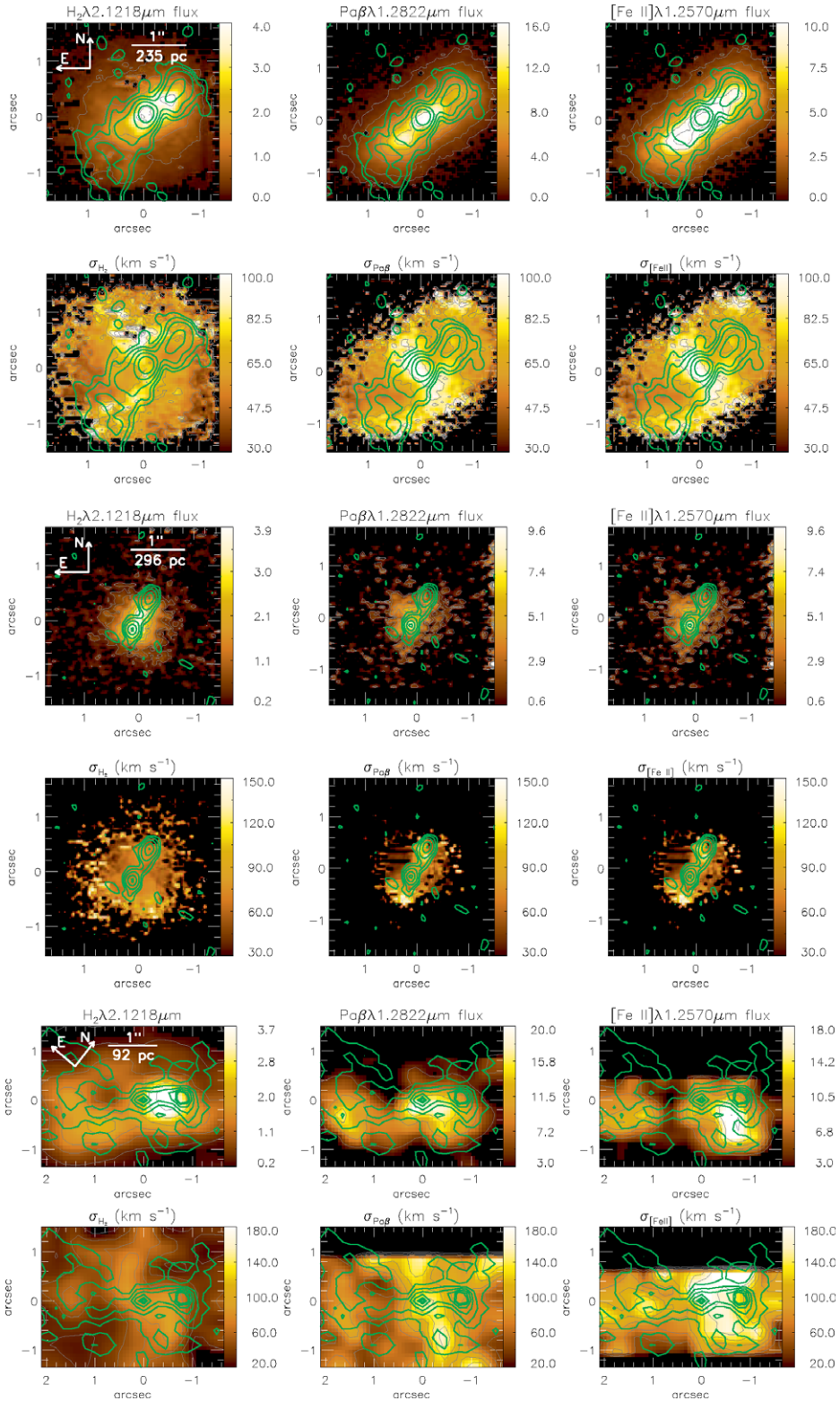


Figure 1. Resulting flux and σ maps for the H_2 2.12 μm , $Pa\beta$ and $[Fe II]$ 1.25 μm (from left to right) for Mrk 1066 (1st and 2nd rows), NGC 591 (3rd and 4th rows) and ESO 428-G14 (5th and 6th rows). The thick contours are from radio continuum images from (Nagar *et al.* 1999) for Mrk 1066 and NGC 591 and from (Falcke *et al.* 1996) for ESO 428-G14.