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Seyferts in 3D : Probing the Kinematic Signatures of Gas Fueling

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We have conducted a 3D imaging spectroscopic survey of 15 nearby Seyfert and control non-active galaxies, using the SAURON Integral Field Unit on the WHT. One goal of the project is to search for dynamical triggers of nuclear activity in nearby galaxies. We present here the preliminary results of the kinematic analysis of the gaseous and stellar velocity fields.

Some galaxies show significant misalignments of the kinematic major axis between the stellar and the gaseous components. To investigate these misalignments, we first compared the average global orientation of the gaseous and stellar velocity fields. Despite the fact that the Seyferts show a larger scatter in the distribution of the kinematic misalignments in the gas with respect to the stars (Fig. 1), we do not find any statistically-significant difference between the Seyferts and their control galaxies for this sample size.

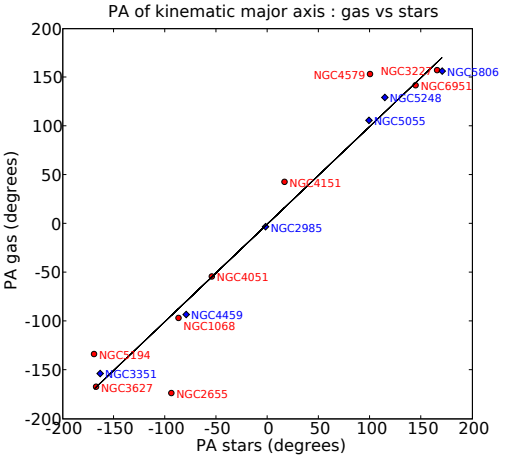

Figure 1. Global stellar versus gaseous kinematic PAs. The one-to-one relation is shown as a black line, active galaxies and non-active galaxies are shown as filled circled and filled diamonds, respectively.

To further study the kinematic misalignments, a more detailed analysis was performed. The tilted ring method was used to derive the kinematic parameters. Residual velocity maps reveal deviations from circular motion that may be consistent with gaseous streaming. Further analysis is underway, via harmonic decomposition in order to quantify and interpret these non-circular motions in the context of AGN fueling.