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TRUE2: establishing a detectability limit on hidden broad line regions.

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Abstract

True Seyfert 2 candidates are those Seyferts galaxies whose optical spectral do not show broad lines, nevertheless in the X-ray domain, they exhibit some characteristic behavior of Seyferts 1 such as lack of X-ray obscuration and/or short timescale variability. A true 2 candidate will be confirmed as a true Seyfert 2 if the lack of its broad line region (BLR) is not only observational but physical. These kind of objects are thought to accrete at low Eddington rates, in agreement with theoretical models that predict that the BLR disappears below a certain critical value of accretion rate and/or luminosity. In the last decade, a significant number of true Seyfert 2s with low accretion rates has been claimed in the literature. However, some exceptions as GNS 069 or 2XMM J1231+1106 show high accretion rates, which seem to contradict the generally accepted explanation.

A limit on the detection of hidden broad line regions (HBLRs) must be established in order to make sure that BLRs are not present intrinsically. Since true Seyfert 2 candidates are selected by the absence of X-ray obscuration, the most plausible explanation to cause the non-detection of a physically present HBLR would be the absence of an adequate scattering medium. Polarimetry can play a key role to answer this question. The presence of an efficient scattering region would imply a high continuum of polarization. We propose to assess what degrees of polarization are high enough to indicate the presence of a scattering medium able to act as a mirror and thus providing us with the indirect view of the HBLRs.

We got new imaging polarimetry data from ISIS@WHT of 10 true 2 candidates which had not been checked in polarized light. If scattering regions are present, undeniable degrees of polarization around 1?3% should be measured. Comparing the measured continuum of polarization with simulations we will be able to estimate a decidability limit on HBLRs. Specifically, we will apply STOKES, a Monte Carlo radiative transfer code which can be used to model, predict, fit and interpret the polarization of AGN. (See poster).