

MODELING BROAD LINE POLARIZATION IN ACTIVE GALACTIC NUCLEI

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Abstract.

Spectropolarimetry of broad emission lines is a powerful tool for probing the geometry and dynamics of the active galactic nuclei (AGNs) central engine (Smith et al. 2005, Goosmann & Gaskell 2007). It provides two additional observables: the degree of polarization and the polarization plane position angle. The latter can be used for supermassive black hole mass (SMBHs) mass measurements assuming that the equatorial scattering is a dominant polarization mechanism (Afanasiev & Popović 2015, Savić et al. 2018), but also, it can indicate the possible presence of binary SMBHs (Savić et al. 2019).

In this work we use 3D Monte Carlo radiative transfer code STOKES (Goosmann & Gaskell 2007) for modeling scattering induced polarization in AGNs, covering broad spectral range around H α line. We assume a disk-like geometry and a dominant Keplerian-like motion, however, additional complex motions such as outflows and inflows, as well as binary SMBH scenarios are also considered.

References

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