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Progress Report

REVERBERATION OF OPTICAL POLARIZATION IN AGN

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Active Galactic Nuclei (AGN) belong to one of the most luminous classes of astronomical sources. Its bolometric luminosity is produced by a supermassive black hole (SMBH) surrounded by an accretion and ejection flow. Optical observations cannot resolve the innermost structures of AGN, and indirect methods are necessary to infer the composition, geometry and physics close to the SMBH. These indirect measurements continue to help to further develop the unified model of AGN by providing constraints on the spatial scales of the central media. Reverberation mapping, both in spectroscopy and in polarization, aims to resolve the central region of AGN at subparsec scales. In my talk, I present modeling of the scattering-induced polarization from an AGN model to determine how precise the constrants can be. I test different geometries for the circumnuclear region, with two kinds of dust distributions with and without polar-winds. By doing so, I provide theoretical predictions for the time-lag in polarization to be compared to spectropolarimetric observations campaigns. The results confirm several known polarization characteristics such as the importance of the observer's viewing angle. For flared equatorial geometries, the time-lag is significantly different between pole-on and edge-on orientations, while a toroidal equatorial geometry gives less sensitive polarized time-lags. The presence of a polar-winds increases the time-lag for all the models tested and brings the modeling closer to observations.