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A polarimetric view of black hole accretion flows and jets

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The Event Horizon Telescope is a global effort to construct an
Earth-sized virtual radio telescope array, with the goal to make pictures and movies of two nearby supermassive black holes. A detailed theoretical understanding of black hole accretion is now crucial to interpret these observations. I will review our current efforts to model polarimetric properties of light produced in synchrotron processes in plasma falling
towards the event horizon. The numerical models are based on general relativistic magnetohydrodynamics simulations so they are capable of capturing the complex dynamics of magnetic fields and their interactions with plasma. It is now
important to understand the polarized radiative transfer in these simulations to correctly predict the observational signatures of the events at the event horizon scales where the accretion disk and jet are connected.

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