

Probing the plasma near supermassive black holes with the Event Horizon Telescope

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The Event Horizon Telescope (EHT) is a planet-sized Very Long Baseline Interferometry array capable of resolving event horizon scale synchrotron emission from the transrelativistic plasma around the nearby supermassive black holes in the galactic center and the M87 galaxy. In addition to imaging the geometric signatures of spacetime in the strong-gravity regime, the EHT probes the emission and accretion physics of hot, turbulent plasma as it falls onto the hole. By comparing the observations to a broad range of astrophysical scenarios encompassing different models for the gas flow, magnetic field structure, and electron thermodynamics, the EHT is able to infer properties of the accretion systems. This talk will review the EHT total intensity and polarimetric images of the M87 black hole as well as the recent total intensity images of the black hole at the center of our galaxy, Sgr A*. The talk will conclude with a brief discussion of some future directions in observational black hole science.