



SPEAKER: Heino Falcke
TITLE: **Imaging Black Holes with the Event Horizon Telescope**
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ABSTRACT

One of the most fundamental predictions of general relativity are black holes. Their defining feature is the event horizon, the surface that even light cannot escape. When illuminated by ambient light, the event horizon of black holes will cast a dark shadow on the emitting region that is detectable under certain circumstances with global interferometers operating at mm- and submm-wavelengths. Recently the Event Horizon Telescope has detected this shadow feature in the radio galaxy M87, providing a first glimpse at scales surrounding the event horizon. Models invoking general relativity and magnetized plasma hydrodynamics are able to reproduce the appearance of the shadow and of the powerful jet launched at these scales. This provides strong support for the existence of supermassive black holes in the universe and sheds light on how they work. To improve the imaging quality further more telescopes should be added to the array, in particular in Africa. The more distant future will belong to higher frequencies and space-based interferometry. The talk will review the latest results of the Event Horizon Telescope, its scientific implications and future expansions of the array.