

Imaging the Event Horizon in the Galactic Center and M87

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When illuminated by ambient light, the event horizon of black holes will cast a dark shadow. For the supermassive black holes in the Galactic center and in M87, this shadow is detectable with the “Event Horizon Telescope” (EHT), a global mm-wave very long baseline interferometry experiment. The Galactic Center hosts a compact radio source, Sgr A*, with a mass of only 4 Million solar masses, determined precisely from stellar orbits. This gives a robust prediction for a shadow size, allowing detailed tests of general relativity there. However, the imaging is challenging due to rapid source variability and image blurring in the interstellar medium. Imaging of M87 is not affected by these effects, but the black hole mass is more uncertain. With advanced computer simulations the appearance of the sources and their shadows can be modelled and predicted in detail. A first global campaign of the EHT was successfully conducted in 2017 and the data is currently being analysed and we discuss here the first results.