



The Event Horizon Telescope

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The Event Horizon Telescope has provided the first images of the supermassive Black Holes in M87 and SgrA*. These results have revealed the gravitationally lensed shadow of the black holes, as predicted by simulations.

The extreme conditions for 1 mm VLBI of these two bright targets, where the atmospheric stability is very short, require special care for imaging. The EHT collaboration have developed some innovative approaches to VLBI imaging and modelling. In particular, the results have been backed up by extensive simulations, which served as a base for selecting the optimal imaging parameters.

These results have been used to test General Relativity, using prior information on orientation (for M87) and black hole mass and distance (for SgrA*). Although the precise measurement depends on the modelled distribution of radiative plasma close to the black hole, the results seem consistent with predictions. The same models can be used to constrain the accretion mechanism and jet formation. In particular when combined with polarisation results, important clues are obtained on the role of the magnetic field.

Where the original data were obtained in the 2017 campaign, more recent publications have been based on the 2018 campaign. The EHT has been improved over the years by adding more telescope elements and increasing the bandwidth. This way we can hope to detect the jet launching mechanism. But better uv-coverage can also allow dynamic imaging of the SgrA* target, where the intrinsic timescales are much shorter than typical synthesis imaging.

It will be discussed how in the future the EHT can be improved further by adding more stations, introduce frequency phase transfer and by going to higher frequencies.