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## RESEARCH

## THE FIRST IMAGE OF MAGNETIC FIELDS AT THE EDGE OF A BLACK HOLE

The scientific collaboration EHT Event Horizon Telescope, which published the first image of a black hole in 2019, has now managed

to produce a new representation of the huge astrophysical object at the centre of galaxy M87: this is the image of the black hole in polarised light. This is the first measurement of the polarisation of light - a phenomenon that indicates the presence of magnetic fields - in a region that lies practically on the "edge" of a black hole, on the so-called event horizon. The result makes a fundamental contribution to explaining how the M87 galaxy emits energetic jets of particles from its core. The study provides valuable information that will help us understand the behaviour of the magnetic fields around black holes and the processes that, in these very dense regions of space, are able to produce jets so powerful that they extend far beyond the galaxy itself. Thanks to the new observations, the EHT collaboration has understood that only theoretical models with strongly magnetised gasses can explain what is seen on the black hole's event horizon. The data indicate that the magnetic fields at the edge of the black hole are strong enough to repel the hot gas and help it resist gravity, leaving only part of the gas to spiral inwards to the event horizon. To observe the heart of the M87 galaxy, the collaboration linked eight telescopes around the world to create a virtual Earth-sized telescope, the Event Horizon Telescope. The results were published in two separate articles in *The Astrophysical Journal Letters* by the EHT collaboration.