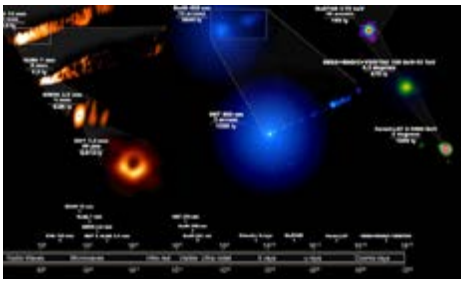

INTERNATIONAL COLLABORATIONS

EARTH AND SPACE TELESCOPES UNITED FOR THE LONGEST OBSERVING RUN OF A BLACK HOLE

A new and extended observation run promises to give an unprecedented view of the black hole at the centre of the M87 galaxy, the first image of which was produced in 2019 by the Event Horizon Telescope (EHT) collaboration, and of the system that feeds it.

The data were collected between the end of March and mid-April 2017 by a team of 760 scientists and engineers from almost 200 institutions and 32 countries, using 19 observatories funded by research agencies and bodies from all over the world. INFN, INAF National Institute for Astrophysics, ASI Italian Space Agency and various Italian universities also participated in this significant international effort. The observations focused on particle jets produced by the black hole of the M87 galaxy, which emit radiation across the whole electromagnetic spectrum, with different characteristics for each black hole that vary over time. This variability made it necessary to coordinate the observations of many telescopes, both on Earth and in space, thus covering all the bands of the electromagnetic spectrum.

The data collected, in combination with other observation runs conducted by EHT, will make it possible to conduct studies in some highly contested fields of astrophysics, as well as to provide new information on the origins of cosmic rays, extremely energetic particles that bombard the Earth from outer space. The jets emitted by black holes are, in fact, considered the most probable source of high-energy cosmic rays, but there are still many open questions on the mechanisms that regulate their production. ■