



RESEARCH

IN AUGUST THE FIRST MONTH OF VIRGO'S DATA ACQUISITION

The second run of data (Run O2) of the gravitational wave detectors LIGO and Virgo ended on August 25 with very interesting results, now under analysis. The Run O2 began on November 2016 with the two American LIGO interferometers that, from 1 August 2017, have been joined by Virgo, the European Gravitational Observatory's interferometer, located in Italy, Cascina (Pisa), and co-operated by the INFN. Virgo's entry in the data taking, alongside the two already active LIGO American detectors, marks a key step forward for the gravitational waves search program: with three active detectors at the same time, it is possible, thanks to the triangulation process, to enormously increase the capacity of localization of gravitational waves sources. This will allow us to observe the region of the sky from which the gravitational wave came in order to search for other signals (electromagnetic or neutrinos). Virgo has entered the data acquisition following the completion of the Advanced VIRGO project, a five-year upgrade phase focused on improving detector sensitivity that has been brought over 25 Megaparsec. The simultaneous operation of the three detectors is the first stone of an ambitious building: a network of 5 detectors (in addition to the two LIGOs in the US and Virgo in Italy, an interferometer in Japan and one in India) that will be able to explore the Sky in search of gravitational waves with an unprecedented sensitivity. The next LIGO-VIRGO data acquisition phase, the Observational Run 3, is scheduled for Fall 2018, following the maintenance and upgrading phase to further improve the sensitivity of the detectors. ■