

Advanced Virgo Dedication Day - 20th of February 2017

Gravitational waves are the new observational-astronomy tool with which it will be possible to study violent phenomena across the Universe, such as the death of neutron-star and black holes binary-systems, supernovae explosions and processes such as those of the early universe, shortly after the Big Bang. These phenomena will be unique opportunities to explore gravitation in extreme conditions and test its theory: general relativity. Advanced Virgo will soon join the global effort to detect gravitational waves and to contribute to this new age of physics and astronomy.

The Advanced Virgo Project is a major upgrade of the Virgo interferometer. Its goal is to increase the sensitivity of the detector by a factor of 10 and to consequently allow the exploration of 1000 times more volume of the universe. Advanced Virgo will be able to look at the last minutes of the life of pairs of compact stars, such as neutron stars, and black holes, as they spiral closer together and eventually coalesce into one larger object. It will also allow to pin-point periodic signals from the many known pulsars that rotate at a rate of up to a thousand rounds per second.

The instrument will operate in agreement with the similar detectors deployed in the USA - the advanced LIGO interferometers - and in the future with the Japanese detector KAGRA.

The upgrade of Virgo includes changes of optics with heavier and better mirrors, new and more powerful electronics, extra seismic isolation systems, scattered light buffers and vacuum system improvements.

The construction, undertaken by laboratories of the Virgo Collaboration, a consortium of scientific groups from six European nations, and by the European Gravitational Observatory, lasted for more than five years. The financial effort was supported by the *Centre National de la Recherche Scientifique (CNRS)* in France, the *Istituto Nazionale di Fisica Nucleare* in Italy and by the Institute in the Netherlands devoted to research in the High Energy Physics domain, Nikhef. In-kind contributions were provided by the Polish Academy of Sciences, the Hungarian Wigner Institute and the Spanish University of Valencia.

The installation of Advanced Virgo has concluded and its commissioning is rapidly progressing towards the first phase of data-taking.

To celebrate this achievement, a dedicated ceremony is to be held at the European Gravitational Observation in Cascina (Pisa), featuring speeches by representatives of the national governments and the presidents of the scientific organizations of the Virgo international collaboration.