

Detector evolution for Gravitational Waves observations

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In the last two decades there has been a growing interest around the possibility to detect on Earth Gravitational Waves emitted by astrophysical sources. One hundred years after Einstein's presentation to the scientific community of the theory of General Relativity, predicting their existence as a perturbation of space-time traveling through the Universe at the speed of light, a network of second generation detectors is being put into operation. It is based on ground based suspended Michelson interferometers aiming at the first direct detection of Gravitational Waves together with the possibility to localize their sources in the sky. An overview of the technological improvements performed in the construction of these sophisticated detectors is presented here with particular emphasis on the Advanced VIRGO interferometer. This experimental apparatus together with two similar ones known as Advanced LIGO will have the opportunity to increase the observable volume of the Universe by a factor of 1000, thus opening the era of Gravitational Waves astronomy.

Presenter: FRASCONI, Franco (Universita di Pisa & INFN (IT))

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