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## A GEODETIC REFERENCE FRAME FOR THE VIRGO INTERFEROMETER

The Virgo detector, currently in its 2nd generation configuration “Advanced Virgo”, is a Michelson interferometer aimed at the gravitational waves research and at opening a new window on the study of the Universe. It is made of two orthogonal arms being each 3 kilometers long and is located at the site of the European Gravitational Observatory (EGO), in the countryside near Pisa, Italy.

This paper reports the development of the Virgo Reference System since 2012, established for the installation of Advanced Virgo. It consists of a wide-scale high precision reference network for the alignment of new equipments or displacement of the existing ones, periodic checks and building position monitoring activity. The survey of the network integrates classical measurements to GNSS measurements, with all observations adjusted in an Eulerian Reference System (ERS). This allowed combining the GNSS baselines, post processed with Bernese scientific software, with the total station observations. Azimuthal and zenithal angles were corrected to take into account the terrestrial curvature and slope distances in function of the atmospheric parameters provided by the EGO meteo station.

### Summary

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