

GINGER analysis pipelines

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Gingerino, prototype for the GINGER experiment, is a ring laser gyroscope that measures the Earth angular velocity, exploiting the Sagnac effect.

Such a measurement, other than for geophysical purposes, is for fundamental physics measurements, if performed with precision and accuracy better than one part over 10^9 .

GINGER is a multipurpose experiment, and a few pipelines are developed for its data analysis.

A geophysics dedicated pipeline is meant to be fast, with suitable filters and data decimation; the high sensitivity analysis is developed in more directions: correcting laser non-linearities, by expansion in series of the “raw” signal (linearization) and linear regression methods; utilizing a double Sagnac signal, which allows to improve of a factor 2 the signal-to-noise ratio, and monitoring the double signal as a feedback on data.

Such methods are described, and current results on Gingerino data.

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