

## **Group IGR**

**Project name** Non-linear noise couplings in the data from the GEO600 gravitational wave observatory

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**Suitability** 20 credit no 30 credit yes 40 credit yes

**Suitable for “theoretical physics”** yes

**Project description** (length should not exceed remainder of page)

Over the past few years the GEO600 gravitational wave detector has surveyed the sky for signals from the most violent events in the Universe, such as super novae or colliding black holes. The corresponding signals are expected to show up as tiny signals with an amplitude similar to fundamental noise limits of GEO600 apparatus. Therefore, it is essential to characterise the noise performance of GEO600.

This project aims to identify spurious noise features in the GEO600 data, especially features originating from non-linear noise couplings, such as 'upconversion', i.e. the conversion from low-frequency noise components into higher frequencies, potentially covering signals from astrophysical gravitational wave sources. In the second part of the project we will then also investigate the possibility to subtract up-conversion noise components out of the data stream of GEO600.