



## LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

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Summer Term 2022

# Gravitationswellendetektion (Gravitational-wave detection)

Prof. Dr. Roman Schnabel and Prof. Dr. Oliver Gerberding

### Course Description:

The course focuses on gravitational wave detection via laser interferometry and introduces all relevant astrophysical sources, detection concepts, projects and technologies. Major focus is on ground-based detectors like LIGO and the Einstein Telescope, but also space-based detection with LISA is covered. Core principles and their realisation, like force-free test masses and ultra-low-noise displacement measurements are introduced in the context of current and future detector developments.

There are 2x 90min lectures per week (4SWS). The first half of the lecture is in German, the 2nd half might be in English, depending on the demand. On top there is an exercises in German or English (2SWS). The lectures take place every Tuesday and Thursday from 10:15 to 11:45. (Irrelevant to the pre-recorded videos.) Exercise classes are 1x 90min per week and take place on Thursdays from 13:30 to 15:00 via Zoom. You need to be able to follow the lectures in German. You can ask questions in English during the exercises.

### Prerequisites:

You should have some knowledge about mechanical oscillators as well as laser physics.

**Date and Place:** The first half of the course is being given by R. Schnabel, the second half by O. Gerberding.

The lectures are online, partly as pre-recorded videos in German (Lecture2Go). The exercises are online and live.

Please subscribe to the lecture at <https://lernen.min.uni-hamburg.de/course/view.php?id=1185> using the password GWD2022, and you will find the Zoom-Link.

**Starting on:**

Starting date: April 5, 2022 at 10:15

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