



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Detection of gravitational waves

2526-113R050

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#### Title

Gravitational Waves Detection

#### Teacher(s)

Massimo Carpinelli

#### Language

Italian/English

#### Short description

The course describes experimental techniques for the detection and analysis of Gravitational Waves (GW) signals. Historical introduction. Properties of GW. GW sources. Detection of GW signals. Laser interferometers for GW detection. Large interferometers currently in operation for GW detection: LIGO, Virgo, KAGRA. Characteristics of a GW interferometer. Main noise sources in a GW interferometer as a function of frequency. Quantum noise, thermal noise, seismic noise. Vibration isolation. Control systems. Future detectors: Einstein Telescope, Cosmic Explorer, LISA.

**CFU / Hours**

2/16 hours

**Teaching period**

Second Semester

**Sustainable Development Goals**

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