



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Astrophysics of Gravitational Waves

2122-1-F5802Q008

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#### Aims

Acquire basic knowledge in the field of gravitational waves, which have recently been confirmed as an extraordinary tool for understanding the universe and the objects that populate it.

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#### Contents

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#### Detailed program

##### 1- Theory of gravitational wave emission

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##### 2- Gravitational wave signals from binary systems

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### **3- Astrophysics of gravitational wave sources**

- stellar mass binaries (white dwarfs, neutron stars, black holes)

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### **5- Bayesian data analysis of gravitational wave signals**

- signal to noise ratio

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### **Prerequisites**

None, besides the basic classes of the bachelor.

It is advised to take this class after Relativistic Astrophysics. Some of the concepts developed during the course will be easier to understand if the students have attended the General Relativity course. I stress, however, that this is not a needed prerequisite, as the course will be largely self-contained.

### **Teaching form**

42 hours of frontal lectures, mostly at the blackboard, occasionally with the support of slides

### **Textbook and teaching resource**

Supporting material will be uploaded on e-learning during the course of the semester, in any case here follows an (incomplete) list of useful references.

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## 2-gravitational wave signals from binaries

Michele Maggiore: "Gravitational Waves". Book 2, 2018

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## Semester

Second semester

## Assessment method

Oral examination. The student will first be asked to elaborate on a topic of his choice for about 15-20 minutes. In the rest of the exam, the lecturer will ask other questions covering any of the topics treated during class.

There will be no intermediate examinations nor marked homework.

## Office hours

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