



PCG0005 – “GRAVITATIONAL WAVES”

(32h/aula – 2 créditos)

NÍVEL: Pós-Graduação

Syllabus:

In this course we will study gravitational waves within the framework of General Relativity. We will place a special emphasis on the emission of gravitational waves by a binary of compact objects (black holes and neutron stars), such as in the historical detections by the Laser Interferometer Gravitational-Wave Observatory (LIGO). The course will consist of two parts. The first part will be lectured by Marc Casals and will focus on general theoretical aspects of gravitational waves and on black hole perturbation theory, including quasi-normal modes. The second part of the course will be lectured by Alexandre Le Tiec, a visiting professor from Observatoire de Paris, France. This second part will focus on post-Newtonian theory and its application to gravitational-wave source modelling and binary pulsar observations.

Bibliography:

- *Gravity: Newtonian, Post-Newtonian, Relativistic* by Eric Poisson and Clifford M. Will. Cambridge University Press, 2014.
- *Gravitational Waves* by Michele Maggiore. Oxford University Press, 2018.