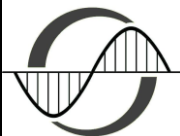




UNIVERSITÀ
degli STUDI
di CATANIA



DIPARTIMENTO DI FISICA E ASTRONOMIA
“ETTORE MAJORANA”

DOTTORATO DI RICERCA IN FISICA
CICLO XLI A.A. 2025/2026

TITLE: Physics and Astrophysics of Neutron Stars

2 CFU

Teaching staff

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Reception hours:

Program of the course:

Lect 1: Introduction to the Phenomenology of Neutron Stars: Pulsars. Observational Data : Telescopes, Interferometers and Satellites.

Lect 2: General Relativity in a nutshell. TOV equations, maximum mass.

Lect 3: Overview of the nuclear strong and weak forces.

Lect 4: The Nuclear Equation of State: nuclear experimental constraints and astrophysical observations

Lect 5: Strange matter in the core: hyperons and mesons.

Lect 6: The hadron-quark phase transition in the stellar core.

Lect 7: Gravitational Wave Astronomy: Non-radial oscillations and binary mergers.

Bibliography:

Books, scientific papers and slides provided by the teacher