



Exoplanets

2 CFU

Teaching staff: Isabella Pagano

Email: Isabella.pagano@inaf.it

Office: INAF – Astrophysical Observatory of Catania

Telephone: +39 095 7332243

Reception hours: 11-12 a.m. from Monday to Friday by appointment (please send an email to the above address)

Program of the course:

1. **Introduction:** A general view of the field and the key questions
 2. **Detection:** The different observations techniques: Radial Velocities, Imaging, Transits, Microlenses, Timing, Astrometry. Methods; challenges; Results to date.
 3. **Census of exoplanets:** distribution in mass and size, multiplanetary systems; orbits, eccentricity, rotation, abundances. Host stars.
 4. **Planetary formation theories:** Terrestrial planet formation, Giant planet formation, Tidal effects, Population synthesis, Orbital migration
 5. **Exoplanet atmospheres:** Observation techniques; hot, warm and temperate planets. Transmission and emission spectroscopy. Phase curves. The concept of habitability. Results to date.
 6. **Facilities for exoplanets:** Present and future facilities from ground to space.
-

Bibliography:

- [1] M. Perryman, *The Exoplanet Handbook*, 2018, 2nd edition, Cambridge Univ. Press
- [2] C.A Haswell, *Transiting Exoplanets*, 2010, Cambridge Univ. Press
- [3] K. Heng, *Exoplanetary Atmospheres*, 2017, Princeton University Press

Recent research papers will be suggested to cover specific topics of this rapidly evolving field.