



UNIVERSITÀ  
degli STUDI  
di CATANIA

DIPARTIMENTO DI FISICA E ASTRONOMIA

“ETTORE MAJORANA”

DOTTORATO DI RICERCA IN FISICA

CICLO XL A.A. 2024/2025

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## Cosmological inflation and large-scale structure

CFU 3

### Teaching staff

**Nome Cognome: Giuseppe Puglisi**

**Email:** giuseppe.puglisi2@unict.it

**Office:** Room 221 DFA

**Reception hours:** Mon- Tue 14-18

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### Program of the course:

Quick review on Big Bang cosmology: FRLW metric, Friedman equations, Big Bang Nucleosynthesis, Recombination. Horizon and Flatness problems.

The inflationary paradigm. The scalar field driving the expansion: the inflaton. Implications on inflation cosmology.

Observables in large scale structures perturbations and in the CMB anisotropies.

Latest constraints on inflationary observables.

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## Bibliography:

- Hu, W., Dodelson S., 2002, *Cosmic Microwave Background Anisotropies*, <https://www.annualreviews.org/doi/pdf/10.1146/annurev.astro.40.060401.093926>
- Dodelson - *Modern Cosmology*, Elsevier
- Carroll, S. 1998, *Quintessence and the Rest of the World*, <https://arxiv.org/abs/astro-ph/9806099>
- slides provided by the teacher