

Module: Elective Advanced Lectures: Theoretical Physics

Module No.: physics70c

Course: Advanced Topics in Particle and Astroparticle Physics (T)

Course No.: physics7509

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises	English	3+2	7	WT/ST

Requirements for Participation:

Preparation:

physics615 and physics711 strongly recommended, a course on General Relativity (e.g. physics754) would also be helpful.

Form of Testing and Examination:

Biweekly Homework Sheets + Final Written Exam

Length of Course:

1 semester

Aims of the Course:

To gain knowledge in Cosmological Perturbations, Axion physics, Dark Messenger physics/dark photons.

Contents of the Course:

- 1) Cosmological perturbations and effect on the CMB
- 2) Axions: Theory and Detection
- 3) Dark Photons: Theory and Detection

Recommended Literature:

- 1) Introduction to the Theory of the Early Universe, Vol. II (Cosmological perturbations and Inflationary Theory) by Gorbunov and Rubakov [World Scientific], Modern Cosmology (Elsevier) 2
- 2) Modern Cosmology, Scott Dodelson (1st edition, 2003)
- 3) Various reviews on axions and dark photons.