

Physics of Supernovae and Gamma-Ray Bursts - astro8502

Degree - M.Sc. in Astrophysics (PO von 2014)

<i>Module</i>	Elective Advanced Lectures: Modern Astrophysics
<i>Module No.</i>	astro850

<i>Course</i>	Physics of Supernovae and Gamma-Ray Bursts
<i>Course No.</i>	astro8502

Category	Type	Language	Teaching		Semester
			hours	CP	
Elective	Lecture with exercises	English	2+1	4	WT

Requirements for Participation:

Preparation: Introductory astronomy and cosmology lectures

Form of Testing and Examination: Written or oral examination, successful exercise work

Length of Course: 1 semester

Aims of the Course: The student will learn basic physics on supernova and gamma-ray burst, and will have an overview on their applications to various fields of astrophysics.

Contents of the Course:

Basic physics on stellar hydrodynamics, radiation processes, and stellar death.

Type Ia supernova: observations and theory. Application to cosmology

Core collapse supernova: observations and theory

Gamma-ray bursts: observations and theory.

Implications for massive star population and star-formation history

Supernova nucleosynthesis and chemical evolution of galaxies

Explosions of the first generations of stars

Some related issues: supernova remnants, neutrinos, shock break-out, etc.

Recommended Literature: Lecture notes with key references for each topic will be provided.