

**Course:** Nuclear astrophysics

**Lecturer:** Dr. S.Lalkovski

**abstract:** Nuclear astrophysics is a modern cross-disciplinary branch of science, aiming at the study of processes that have led to currently observed nuclear abundance. These processes have started in the Early Universe and continued later in the stars, forming all chemical elements we observe in nature -from hydrogen to plutonium. The course covers a range of topics - from basic astrophysics and nuclear physics concepts, through reaction rates, burning cycles and advanced burning stages. Experimental methods for measurements of nuclear characteristics, which are of key importance for the nuclear astrophysics, are discussed, as well as techniques used in the contemporary telescopes for X- and gamma-ray astronomy.

**preliminary requirements:** Completion of an Introductory nuclear physics course

**key competences acquired:** The students will be introduced to the main aspects of the subject. They will also acquire knowledge on modern technologies used in the observation of the hot Universe and state-of-the-art nuclear structure facilities, where related experiments are performed.