Study programmes: Bachelor studies – Astronomy and Astrophysics

Course name: Stellar statistics

Lecturers: Dušan Onić

Status: Compulsory

ECTS: 5

Attendance prerequisites: enrolled into fourth year of studies

Course aims: Acquiring general and specific knowledge in stellar statistics

Course outcome: At the end of the course student has basic knowledge in stellar statistics and trained for future scientific work in this area.

Course content: Introduction. Object and problems in stellar statistics. Observed stellar characteristics. Variable time dependence. Distribution functions and their properties. Distribution of single and multiple characteristics. Parameters for distribution analysis. Normal distribution of single and multivariable functions. Variable transformation. Functions of stellar characteristics. Distribution of apparent and absolute magnitudes. Differential and integral distribution functions. Zeilinger theorem. Total number of stars in Galaxy. Problems of statistical description of Galaxy. Integral equations of stellar statistics. Fundamental equations in absolute transparency medium. Canonical form. Fredholm's equation of first order. Analytical and numerical methods for solution. Interstellar extinction. Continuous and non-continuous medium. Extinction function in plan-parallel model. Influence of interstellar extinction on function of stellar concentration. Vashakidze-Oort method. Extinction function in spatial distribution in Galaxy (Hubble's and Oorts's equation). Selective extinction. Surface brightness fluctuation of galactic field. Fundamental equation in theory of fluctuations. Equation for moments of differential brightness function. Solution for Galaxy. Dependences of fluctuation on galactic latitude.

Literature:

Т. Ангелов, 2013, *Звездана астрономија*, Математички факултет, Београд
R.J. Trumpler and F.H. Weaver: 1953, *Statistical Astronomy*, Dover Publ., New York
P.G. Kulikovski: 1985, *Zvezdnaja astronomija*, "Nauka", Moskva
G. Gilmore, I.R. King, P.C. van der Kruit: 1989, *The Milky Way as a Galaxy* (eds. R. Buser, I.R. King),Univ. Sc. Books, California

Exercises: И. Атанасијевић, Ј. Милорадов-Турин, 1974, *Изабрана поглавља из звездане астрономије*, Београд

Number of hours: 4	**Lectures: 2**	**Tutorials: 2**

Teaching and learning methods: Group work

Assessment (maximal 100 points)

Course assignments	**points**	**Final exam**	**points**
Lectures		Written exam	
Exercises / Tutorials	40	Oral exam	60
Colloquia			
Essay / Project			