

**Modules:**

physics700 **Elective Advanced Lectures**  
 physics730 **Theoretical Physics**

**Course:**

## Probability theory and stochastic processes for physicists (T)

**Course No.:**

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture	English	3	4	WT

**Requirements:****Preparation:**

Statistical mechanics on the bachelor level

**Form of Testing and Examination:**

Oral examination or term paper

**Length of Course:**

1 semester

**Aims of the Course:**

Acquaintance with probabilistic concepts and stochastic methods commonly used in the theory of disordered systems and nonequilibrium phenomena, as well as in interdisciplinary applications of statistical physics.

**Contents of the Course:**

Limit laws and extremal statistics  
 Point processes  
 Markov chains and birth-death processes  
 Stochastic differential equations and path integrals  
 Large deviations and rare events

**Recommended Literature:**

D. Sornette: Critical Phenomena in Natural Sciences (Springer, 2004)  
 N.G.Van Kampen: Stochastic Processes in Physics and Chemistry (Elsevier, 1992)