Nuclear physics II (E) - Nucl. physics II

Course	**Nuclear physics II (E)**
Course No.	Nucl. physics II

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture	English	3	5	WT

Requirements:

Preparation: Nuclear Physics I, Quantum Mechanics

Form of Testing and Examination: Part of the obligatory courses for area of specialisation Nuclear and Particle Physics, separate oral examination is possible exceptionally.

Length of Course: 1 semester

Aims of the Course: Study of nuclear reactions, fission and fusion.

Contents of the Course:

- Kinematics in nuclear reactions
- Cross section
- Rutherford scattering
- Scattering in quantum mechanics
- The Born approximation
- Partial wave analysis
- Inelastic scattering, resonances
- Optical model
- Direct, compound, spallation and fragmentation reactions
- Neutron sources and detectors
- Neutron cross sections
- Fission
- Nuclear reactors
- Fusion
- Solar fusion
- Man-made thermonuclear fusion
- Controlled thermonuclear fusion

Recommended Literature:

A script for parts of the course will be distributed during the course.

K.S. Krane, Introductory nuclear physics, chapters 11-14

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