

DESCRIPTION OF THE COURSE OF STUDY FOR EXCHANGE STUDENTS

Name of the course in	English	Relativistic quantum mechanics
	Polish	Relatywistyczna mechanika kwantowa

1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

1.1 Field of study	Physics
1.2 Level of study	2 nd cycle

2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1 Language of instruction	English
2.2 Semesters in which the course of study is offered	2
2.3 ECTS credits	2

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes	traditional lecture
3.2. Form of assessment	oral exam

4. OBJECTIVES, SYLLABUS CONTENT

<p>4.1. Course objectives C1. to acquaint students with the basic ideas of relativistic quantum theory; C2. prepare students to independently study quantum field theory.</p>
<p>4.2. Detailed syllabus</p> <ol style="list-style-type: none"> 1. Difficulties in „relativization” of quantum mechanics 2. Canonical quantization applied to a harmonic oscillator 3. Scalar field – classical description and canonical quantization 4. Spinor field – classical description and canonical quantization 5. Electromagnetic field – classical description and canonical quantization 6. Relation of spin and statistics – problems with the hamiltonian na microcausality 7. Interacting fields and their temporal evolution 8. S matrix, cross section and amplitudes 9. The simplest collisional processes 10. Propagators 11. Feynman rules and simple collisional processes