



QUANTUM ELECTRODYNAMICS

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| Enrollment year | 2016/2017 |
| Academic year | 2017/2018 |
| Regulations | DM270 |
| Academic discipline | FIS/02 (THEORETICAL PHYSICS, MATHEMATICAL MODELS AND METHODS) |
| Department | DEPARTMENT OF PHYSICS |
| Course | |
| Curriculum | Fisica della materia |
| Year of study | 2° |
| Period | 1st semester (02/10/2017 - 19/01/2018) |
| ECTS | 6 |
| Lesson hours | 48 lesson hours |
| Language | Italian or English upon request (English friendly course - http://fisica.unipv.it/dida/English-friendly-programme.pdf). Study material in English. |
| Activity type | ORAL TEST |
| Teacher | BACCHETTA ALESSANDRO (titolare) - 6 ECTS |
| Prerequisites | Quantum mechanics and Special Relativity |
| Learning outcomes | Introducing the basic concepts of relativistic quantum field theories. Reach the ability to compute Feynman diagrams, through the derivation of Feynman rules. |
| Course contents | The course treats the following main topics: - Klein-Gordon equation and Dirac equation - Field theories and their quantization - Field interactions and Feynman diagrams - Computation of some scattering processes at tree level |
| Teaching methods | Traditional lectures with blackboard calculations. Eight/ten hours of additional exercise sessions. |

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| Reccomended or required readings | <ul style="list-style-type: none"> - Lecture notes (see http://www.pv.infn.it/~bacchett/teaching.html) - F. Mandl, G. Shaw, "Quantum Field Theory - Second Edition" (Wiley, 2010) <p>Further references:</p> <ul style="list-style-type: none"> - L. Ryder, "Quantum Field Theory", Cambridge - M. Peskin, Schroeder, "An Introduction to Quantum Field Theory", - I.J.R. Aitchison, A.J.G. Hey, "Gauge theories in particle physics – A practical introduction", Vol I, Fourth edition |
| Assessment methods | <p>Written exam, mainly devoted to the computation of Feynman diagrams and of the cross section for a scattering process at tree level. Oral exam concerning the formalism of quantum field theory and the derivation of Feynman rules.</p> |
| Further information | <p>Written exam, mainly devoted to the computation of Feynman diagrams and of the cross section for a scattering process at tree level. Oral exam concerning the formalism of quantum field theory and the derivation of Feynman rules.</p> |
| Sustainable development goals - Agenda 2030 | <p>\$lbl legenda sviluppo sostenibile</p> |