General Theory of Relativity / Quantum Field Theory and
Solid State Theory / Computational Physics

Module No.: MN-P-SP-GR-QFT, MN-P-SP-ThSol, MN-PN-GR-QFT, MN-PN-ThSol, MN-PN-WaMa

Version: 17.01.2014 SG

Course: Quantum Field Theory I

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Category	Type	Language	Teaching Hours	CP	Semester
Core Course	Lecture	English	4+2	9	

Requirements for participation:

Training in theoretical physics at the B.Sc. level

Type of module examinations:

Written or oral examination and one oral examination at the end of the module

Duration of the course:

1 semester

Aims of the course:

Methods of quantum field theory are in use in almost all areas of modern physics. Strongly oriented towards applications, this course offers an introduction based on examples and phenomena taken from the area of solid state physics.

Contents of the course:

- Second quantization and applications
- Functional integrals
- Perturbation theory
- Mean-field methods

Recommended literature:

A. Altland and B.D. Simons, Condensed Matter Field Theory (Cambridge University Press, Cambridge, second edition: 2010)