Module: Elective Advanced Lectures: Theoretical Physics

Module No.: physics70c

Course: Computational Methods in Condensed Matter Theory (T)

Course No.: physics767

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises	English	3+2	7	WT/ST

Requirements for Participation:

Preparation:
Quantum Field Theory (physics755)
Advanced Theoretical Physics (physics607) / Advanced Quantum Field Theory (physics7501)
Advanced Theoretical Condensed Matter Physics (physics638)

Form of Testing and Examination:
Active participation in exercises, written examination

Length of Course:
1 semester

Aims of the Course:
Detailed discussion of computational tools in modern condensed matter theory

Contents of the Course:
Exact Diagonalization (ED)
Quantum Monte Carlo (QMC)
(Stochastic) Series expansion (SSE)
Density Matrix Renormalization (DMRG)
Dynamical Mean Field theory (DMFT)

Recommended Literature:
will be given in the lecture