

# Module: Elective Advanced Lectures: Theoretical Physics

Module No.: physics70c

Course:  universität**bonn**

## 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