

# 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