# Primary Area of Specialization

# General Theory of Relativity / Quantum Field Theory

**Module No.: MN-P-SP-GR-QFT**                                      status quo 08.05.2012

|                     | HPW | estimated effort (h) | credit points |
|---------------------|-----|----------------------|---------------|
| **Lecture Course**  | 9   | 400                  | 16            |
| **Problem Class**   | 2   | 80                   |               |
| **Advanced Seminar**| 2   | 120                  | 4             |
| **Total**           | 13  | 600                  | 20            |

## Literature
Hartle, Gravity (Addison-Wesley)
Misner Thorne Wheeler, Gravitation (Freeman)
Mukhanov, Physical Foundations of Cosmology (Cambridge University Press)
Ryder, Quantum Field Theory (Cambridge University Press)
Altland Simons, Condensed Matter Field Theory (Cambridge University Press)

## Organization
The Primary AoS General Theory of Relativity / Quantum Field Theory is composed of:
1. 2 Core Courses (4+2 hpw, 3 hpw)
2. 1 Specialized course (2 hpw)
3. 1 Advanced seminar (2 hpw)

If the core course set with 3 hpw is offered only as a course with 4+2 hpw, only the scale of 3 hpw is relevant for the examinations.

## Examinations
The module is passed by passing an oral examination covering the topics of all attended courses. To be admitted to the exam, students must actively participate in the problem sessions (including the solution of homework problems) and present a scientific talk in the seminar course.
The grade given for the module is equal to the grade of the oral examination.

## Aims
The module offers the material that is needed in order to follow current research in general relativity and quantum field theory. It enables the candidate to carry out the research for a master thesis in one of these topics.

## Prerequisites for Participation
None

## Prerequisites
Basic knowledge in theoretical physics at the level of the bachelor courses in physics.

## Frequency
Alternates between GR and QFT, perhaps QFT I annually.
The advanced seminar is offered each semester.

**Soft Skills**
Elocution and public speaking

**Use in Other Courses of Study**
Mathematics, suitable as elective

**Coordinators**
Martin Zirnbauer