

Recommendations for a Master-Curriculum with focus on "Theoretical Particle Physics and Mathematical Physics"

Start in Winter Term:

Semester 1 (Winter Term)

P22.b Einführung in die Quantenfeldtheorie/Introduction to Quantum Field Theory (8 credit points)
P23.1 Einführung in die Elementarteilchenphysik/Introduction to Elementary Particle Physics (8 credit points)
P21 Statistische Physik/Statistical Physics (8 credit points)
(Alternatively, in Semester 2, if two P22 courses are chosen)
In addition, one or two of the following courses:
P22.a Wissenschaftliches Rechnen/Scientific Computing (6 credit points)
(in Specialisation Lattice or Phenomenology)
P22.c Allgemeine Relativitätstheorie/General Relativity (6 credit points)
(in Specialisation QFT/Mathematical Physics)
P22.d Mathematische Methoden der Physik/Mathematical Methods in Physics (6 credit points)
(for all)

Semester 2 (Summer Term)

P24.1.a Fortgeschrittene Quantenfeldtheorie/Advanced Quantum Field Theory (6 credit points)
P21 Statistische Physik/Statistical Physics (8 credit points) (Alternatively in Semester 1)

Depending on course offers, at least two of these modules:

P24.1.b QCD an Beschleunigern/QCD at colliders (6 credit points)
P24.1.c Einführung in die Stringtheorie/Introduction to string theory (6 credit points)
P24.1d Einführung in die Gitterfeldtheorie/Introduction to lattice gauge theory (6 credit points)
P25.1.a Spezialmodul Theoretische Teilchenphysik/Theoretical particle Physics (6 credit points)
P25.1.5 Spezialmodul Mathematische Physik/Mathematical Physics (6 credit points)

P27 Einführung in das wissenschaftliche Arbeiten/
Introduction into advanced scientific practice (7 credit points)

Semester 3 (Winter Term)

P23.x Schwerpunktmodul II (8 credit points)
(Recommandation: Theoretische Festkörperphysik/Theory of solid state physics)
P27 Einführung in das wissenschaftliche Arbeiten/+
Introduction into advanced scientific practice (7 credit points)

Afterwards:

P28 Forschungsbeleg/Introduction into independent scientific research (18 credit points)

Semester 4 (Summer Term)

Masterarbeit/master thesis (30 credit points)

In addition, "Überfachlicher Wahlpflichtbereich" (P30):

2*5 or 10 credit points depending on course offers distributed over all 4 terms.

Recommandation: Modules in Mathematics, Mathematical Physics or Informatics

Start in Summer Term (less ideal)

Semester 1 (Summer Term)

P21 Statistische Physik/Statistical Physics (8 credit points)

“Überfachlicher Wahlpflichtbereich” (P30): 2*5 or 10 credit points depending on course offers.
Recommandation: Modules in Mathematics or Informatics

P27 Einführung in das wissenschaftliche Arbeiten/
Introduction into advanced scientific practice (14 credit points)

Semester 2 (Winter Term)

P22.b Einführung in die Quantenfeldtheorie/Introduction to quantum field theory (8 credit points)

P23.1 Einführung in die Elementarteilchenphysik/Introduction to particle physics (8 credit points)

In addition, two/three of the following modules:

P22.a Wissenschaftliches Rechnen/Scientific Computing (6 credit points)
(in Specialisation Lattice or Phenomenology)

P22.c Allgemeine Relativitätstheorie/General Relativity (6 credit points)
(in Specialisation QFT/Mathematical Physics)

P22.d Mathematische Methoden der Physik/Mathematical Methods in Physics (6 credit points)
(for all)

Semester 3 (Summer Term)

P24.1.a Fortgeschrittene Quantenfeldtheorie/Advanced quantum field theory (6 credit points)

Depending on course offers, at least two of these modules:

P24.1.b QCD an Beschleunigern/QCD at colliders (6 credit points)

P24.1.c Einführung in die Stringtheorie/Introduction to string theory (6 credit points)

P24.1d Einführung in die Gitterfeldtheorie/Introduction to lattice gauge theory (6 credit points)

P25.1.a Spezialmodul Theoretische Teilchenphysik/Theoretical particle Physics (6 credit points)

P25.1.5 Spezialmodul Mathematische Physik/Mathematical Physics (6 credit points)

P28 Forschungsbeleg/Introduction into independent scientific research (18 credit points)

Semester 4 (Winter Term)

P23.x Schwerpunktmodul II (8 credit point)
(Recommandation: Theoretische Festkörperphysik/Theory of solid state physics)

Masterarbeit/master thesis (30 credit points)