

**Recommendations for a Master-Curriculum with focus on
“Astroparticle Physics (Experiment or Theory)”**

Start in Winter Term (optimal):

Semester 1 (Winter Term)

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)

P22.g / P25.1.a / P25.1.c Kosmologie / Cosmology (6 credit points)

P25.1.a Theoretische Neutrino-physik und Astrophysik / Neutrino physics and astrophysics (6 credit points)
(Alternatively, in Semester 2)

Focus Experiment:

P22.g/P25.1.c Stat. Methoden der Datenanalyse/Statistical methods in data analysis (6 credit points)

Focus Theory:

P22.a Wissenschaftliches Rechnen / Computational Physics II (6 credit points)

or

P22.b Einführung in die Quantenfeldtheorie / Introduction to Quantum Field Theory (8 credit points)

Semester 2 (Summer Term)

P24.1.g Astroteilchenphysik / Astroparticle physics (6 credit points)

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

Focus Experiment:

P24.1.e Experimentelle Elementarteilchenphysik 1/Experimental particle physics 1 (6 credit points)

P24.1.h Detektoren/Detectors (6 credit points)

Focus Theory (2 out of the following 3 modules):

P22.d Mathematische Methoden der Physik / Mathematical Physics (6 credit points)

P22.c Allgemeine Relativitätstheorie / General Relativity Theory (6 credit points)

P25.5 Wissenschaftliches Rechnen / Computational Physics III (6 credit points)

Possible additional modules, depending on course offers:

P25.1.d Spezialmodul Experimentelle Teilchen-/Astroteilchenphysik 2 (6 credit points)

Semester 3 (Winter Term)

P23.x Schwerpunktmodul II (Recommendation Experiment: Laserphysik/Physics of Lasers, Theory:
Theoret. Festkörperphysik / Theory Solid State Physics) (8 credit points)

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 (30 credit points)

In addition, “Überfachlicher Wahlpflichtbereich” (P30):

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

Recommendation: Modules in Mathematics or Informatics.

Start in Summer Term (less optimal):

Semester 1 (Summer Term)

P24.1.g Experimentelle Astroteilchenphysik/Experimental Astroparticle Physics (6 credit points)
P21 Statistische Physik/Statistical Physics (8 credit points)

P25.1.a/c/d Spezialmodul Experimentelle Teilchen-/ (theor.) Astroteilchenphysik / Experimental Astroparticle Physics, experiment or theory (6 credit points)

(Alternatively, in Semester 2)

Focus Experiment:

P24.1.e Experimentelle Elementarteilchenphysik 1/Experimental particle physics 1 (6 credit points)
P24.1.h Detektoren/Detectors (6 credit points)

Focus Theory:

P22.d Mathematische Methoden der Physik / Mathematical Physics (6 credit points)
P22.c Allgemeine Relativitätstheorie / General Relativity Theory (6 credit points)

Semester 2 (Winter Term)

P23.1 Einführung in die Elementarteilchenphysik/Introduction to Elementary Particle Physics (8 credit points)

P22.g / P25.1.a / P25.1.c Kosmologie / Cosmology (6 credit points)

Focus Experiment:

P22.d/P25.1.c Stat. Methoden der Datenanalyse/Statistical methods in data analysis (6 credit points)

Focus Theory:

P22.a Wissenschaftliches Rechnen / Computational Physics II (6 credit points)
or
P22.b Einführung in die Quantenfeldtheorie / Introduction to Quantum Field Theory (8 credit points)

Experiment:

P23.x Schwerpunktmodul II (Recommendation Experiment: Laserphysik/Physics of Lasers)(8 credit points)

Semester 3 (Summer Term)

Theory:

P23.x Schwerpunktmodul II (Physikalische Kinetik) (8 credit points)

P27 Einführung in das wissenschaftliche Arbeiten/
Introduction into advanced scientific practice (14 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 terms.

Recommendation: Modules in Mathematics or Informatics.