



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG

**CHAMPP**

CENTER IN HAMBURG FOR  
ASTRO-, MATHEMATICAL AND  
PARTICLE PHYSICS

**LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL**

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Summer Term 2019

# Accelerator Physics II

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## Course Description:

Particle accelerators play an essential role in material research, high energy, hadron and nuclear physics, and are meanwhile indispensable tools serving various industrial and medical applications. In the course of related demanding challenges in accelerator operation and development, accelerator physics emerged as a stand-alone field of applied physics. The course will be a continuation of Accelerator Physics I and addresses this expanding and interesting research field on an advanced level.

Lecture contents: synchrotron radiation, radiative damping and equilibrium, low emittance lattices, beam lifetime, colliders, luminosity optimization, phase space cooling, wigglers and undulators, low and high gain free electron lasers.

The opportunity will be offered to exemplify and deepen the subject matter by detailed visits of the DESY accelerator complex and a 4 days scientific excursion to European accelerator labs like GSI, PSI and CERN.

## Prerequisites:

Knowledge in electrodynamics, attendance of the introductory course Accelerator Physics I would be beneficial but is not required.

## Literature:

Will be discussed during the lecture.

**Date and Place:** Thu, 13:30 – 15:00, Hörsaal III, Jungiusstr. 9

**Problem Classes:** Thu, 15:15 – 16:45, Poolraum 3, Jungiusstr. 9

**Starting on:** 4 April 2019

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