



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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Winter Term 2022/2023

# Accelerator Physics I

Wolfgang Hillert

## 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 address this expanding and interesting research field on an introductory level.

Lecture contents: functional principle of different types of particle accelerators, layout and design of simple magneto-optic systems, radio frequency engineering and technology for particle accelerators, linear transverse and longitudinal beam dynamics.

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 (typ. in September) to European accelerator labs like GSI, PSI and CERN.

## Prerequisites:

Knowledge in electrodynamics.

## Literature:

Will be discussed during the lecture.

**Date and Place:** Thu 13:30–15:00, SR 1083, Notkestr. 9, Bahrenfeld

**Problem Classes:** Thu 15:15–16:45, SR 1083, Notkestr. 9, Bahrenfeld

**Starting on:** 20 October 2022

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