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

Summer Term 2021

Advanced Algebra

Birgit Richter

Course Description:

The aim of this course is to present the basics of homological algebra. Methods from homological algebra are used in many areas of pure mathematics and mathematical physics. I will develop the theoretical background (rings and modules, basics from category theory) and then discuss resolutions and derived functors. Our two main applications are Hochschild homology (which is a homology theory for associative algebras) and group homology. Homological algebra is pretty useless unless you are able to calculate things, so I'll also discuss spectral sequences.

Prerequisites:

Introductory course on algebra

Literature:

Lecture notes and a list of recommended books can be found on
`https://www.math.uni-hamburg.de/home/richter/alg21.html`.

Date and Place:	Tue 10:15–11:45, Thu 12:15–13:45, recorded videos
Problem Classes:	Wed, 14:15–15:45, Zoom link available after subscription
Starting on:	6 April 2021