FSU Jena
Institut für Mathematik
Dr. Shahryar Ghaed Sharaf

Sommersemester 2026

Algebraic Topology 2

Information:
We begin the first part of the lecture by recalling some fundamental constructions in algebraic topology, namely the cup product, cap product, and cross product. Following this, we explore several applications of Poincaré duality, with the goal of understanding key topological properties of well-known manifolds such as spheres, projective spaces, and lens spaces. The second part of the lecture shifts focus to homotopy theory. We start by defining basic concepts and introducing elementary computational methods, including the theory of fiber bundles. Additionally, we aim to study the notions of fibration and cofibration, which are central to modern homotopy theory.

Literature:
Allen Hatcher, *Algebraic Topology*