UℋH Universität Hamburg
DER FORSCHUNG I DER LEHRE I DER BILDUNG

CHAMPP
CENTER IN HAMBURG FOR
ASTRO-, MATHEMATICAL AND
PARTICLE PHYSICS

LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Winter Term 2023/24

Geometric topology

Janko Latschev

Course Description:

The course covers a variety of tools for working with smooth manifolds, possibly in the presence of additional geometric structures that one wants to manipulate and/or understand.

We will start with some aspects of differential topology, including transversality and its uses. The subsequent content may be influenced by student interests, and could include a selection of the following topics: Morse theory, basic structure theory for 3-manifolds (Heegaard splittings, surgery, etc.), trisection of 4-manifolds, handle decompositions of manifolds and the h-cobordism theorem, vector bundles and characteristic classes, h-principles.

Prerequisites:

Working knowledge of basic topology and of smooth manifolds. Differential geometry and algebraic topology are also helpful.

Date and Place:	Tue, 14:15 – 15:45, Room 205, Sedanstraße 19
	Thu, 12:15– 13:45, Lecture Hall H4, Geomatikum
Problem Classes:	Wed 16:15 – 17:45, Room 428, Geomatikum
Starting on:	October 17, 2023