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Heidelberg, den 27. Januar 2026

COURSE ANNOUNCEMENT:

TOPOLOGICAL CLASSIFICATION OF HIGH-DIMENSIONAL MANIFOLDS
(SS 2026)

(Special topics module geometry and topology MM33, LV-Nr. 11001233XX, 4 SWS, 6 LP, no problem sessions.)

Time and Place: We currently plan for We. 9-11 am, Fr. 9-11 am; room TBA.

First Lecture: April 15, 2026.

Registration: Please register for the course on HeiCO and on the MaMpf-System.

Grades: The assignment of grades will be based on oral exams. You need to register for the exam in advance on HeiCO. Examination day will be We. July 22 (and if necessary Th. July 23) 2026. The exams will take place in Prof. Banagl's office INF 205, 3.317.

Office Hours: Fr. 1-2 pm. INF 205, 3.317.

Prerequisites: Homology and homotopy theory, familiarity with the notion *manifold*.

Topics:
Basic material on stable homotopy theory, relevant bundle theories and their classifying spaces (vector bundles, microbundles, topological and piecewise linear bundles, block bundles), characteristic classes, bordism theories and their relation to ordinary homology, Thom spectra, Thom-Pontrjagin isomorphisms, introduction to the classification of manifolds via the surgery program, splitting and topological invariance of L-classes, higher signatures and the Novikov conjecture, the symmetric signature. Time permitting, we may also discuss extensions of the above invariants to singular spaces. The lectures will be given in English.