UNIVERSITÄT
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Heidelberg, den 30. März 2021

COURSE ANNOUNCEMENT:

TOPOLOGY OF HIGH-DIMENSIONAL MANIFOLDS AND SINGULAR SPACES

(SS 2021)

(MM33, 4 SWS, 6 LP, no problem sessions.)

Time and Place: Tu. 9-11 am, Th. 9-11 am; if and when presence meetings are possible, we will use INF 205 SR C.

Start: April 13, 2021.

Registration: Please register for the course first on the MÜSLI-System. As long as physical meetings are not possible, the course will run on the University's Moodle System. You will receive an email from Shahryar Ghaed Sharaf, `ssharaf@mathi.uni-heidelberg.de`, containing a registration key (Einschreibeschlüssel). Using this key, you must enroll in the Moodle-course "Topology of high-dimensional manifolds and singular spaces". There, you will find the lectures as MP4 videos. Questions can be asked in Prof. Banagl's heiCONF-office hour (see further below).

Grades: The assignment of grades will be based on oral exams. Examination day will be Tuesday July 20, 2021. If possible, the exams will take place in Prof. Banagl's office, otherwise online on heiCONF.

Office Hours: Thursday 1-2 pm. The heiCONF-meeting room information will be sent to registered participants by email. Alternatively, you may of course call me any time at my office telephone.

Prerequisites: Homology and homotopy groups, basic differential topology.

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, stratified spaces and intersection homology, bordism and Goresky-MacPherson L-class of singular spaces, ad-theories, the stratified Novikov conjecture. The lectures will be given in English.