

Hans-Bert Rademacher

Wintersemester 2020/21:

Lecture Morse theory, closed geodesics and geometry

Tuesday 11:15 -- 12:45 online

start: Tuesday, October, 27

Please enrol in **MOODLE**

Topics:

We will discuss how one can show the existence of closed resp. periodic geodesics on a compact Riemannian manifolds using Morse theory on the free loop space.

In case of positive curvature one can estimate the length of a shortest closed geodesic.

References:

- *W.Klingenberg*: Riemannian Geometry, 2nd rev. edition, de Gruyter Berlin New York 1995 [Springer Link](#)
- *A. Oancea*: Morse theory, closed geodesics, and the homology of the free loop space, [arXiv:1406.3107](#)
(chapter of the book: Free loop spaces in geometry and topology, Editors: Janko Latschev, Alexandru Oancea, IRMA Lectures in Mathematics and Theoretical Physics 24, European Math. Soc. 2015)

students:

- students of mathematics (Diplom)

- students in mathematical physics (M.Sc.) :

The lecture is part of the module [Advanced Differential Geometry 2](#) (with the lecture by Dr. Sebastian Boldt)

prerequisites:

basics of differential geometry and algebraic topology