Institut für Geometrie und Topologie

Wintersemester 2024/2025

Niklas Rauchenberger M.Sc. Universität Stuttgart

Endpoint Geodesic Formulas for the Special Euclidean Group

24. Oktober 2024– 16:15 Uhr Raum 7.530

Abstract: The special Euclidean group is the semidirect product of the special orthogonal group and Euclidean space. It is a Lie group of great interest in many applications such as theoretical mechanics, robotics or computational anatomy. In this talk, the endpoint geodesic problem on the special Euclidean group will be discussed, i.e. the boundary value problem of finding geodesics that connect two given points on it. We derive closed formulas for this curves that only depend on the given data by embedding the special Euclidean group into a bigger vector space. This leads to an equation involving so-called normal space involutions from which we can solve the endpoint geodesic problem explicitly.



Institut für Geometrie und Topologie Pfaffenwaldring 57 70569 Stuttgart