



universität
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Fakultät für Mathematik

Mathematisches Kolloquium

Mittwoch, 26. April 2023

Sky Lounge

EINLADUNG

Martin Bauer

(Florida State University)

„Shape Analysis: the challenge of geometric data“

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Abstract:

The past decades have seen tremendous advances in imaging techniques, which have led to a significant growth in the quantity and complexity of data in fields such as biomedical imaging, neuroscience and medicine.

Naturally, this prompted the emergence of new mathematical and algorithmic approaches for the analysis of such data, which led to the emergence and growth of fields such as geometric shape analysis and topological data analysis. Infinite dimensional Riemannian geometry has proven to be a powerful tool to deal with the challenges that arise in this context. In my talk I will give a short introduction to the general concept of infinite dimensional Riemannian geometry, where I will discuss several of the striking phenomena that might arise in this situation. I will then focus on the class of Sobolev metrics on spaces of curves and surfaces. For this class of Riemannian metrics I will discuss the local and global well-posedness of the geodesic equations and properties of the geodesic distance. Finally, to show how we can use this setup in practice, I will discuss the numerical implementation of a statistical framework based on such metrics.

14.45 Uhr: Kaffeejause

15.15 Uhr: Vortrag

Vinum cum pane im Anschluss

Peter Michor
Radu Ioan Boț