![Universität Wien - Fakultät für Mathematik]

Mathematisches Kolloquium

Mittwoch, 25. Mai 2022
Sky Lounge

EINLADUNG

Peter Michor
(Universität Wien)

"Whitney manifold germs as source for manifolds of mappings"

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Abstract:
During the preparation of a foundational chapter on manifolds of mappings for a book on geometric continuum mechanics I found out that the following object behaves surprisingly well as source of a manifold of mappings:
— A Whitney manifold germ M̃ ⊃ M consists of an open manifold M̃ together with a closed subset M ⊂ M̃ which is the closure of its open interior, such that there exists a continuous linear extension operator from the space of Whitney jets on M to the space of smooth functions C∞(M̃), with their natural locally convex topologies. This concept is local in M̃, due to recent advances for the existence of continuous Whitney extension operators by D. Vogt, M. Tidten, L. Frerick, and J. Wengenroth. This notion is more general than all existing notions: domains with Lipschitz boundary or Hölder boundary, the manifolds with rough boundary of Roberts and Schmeding.
— The following concepts are very well behaved: Smooth mappings into manifolds. Vector bundles. Fiber bundles. The space of vector fields on M tangent to the boundary is a convenient Lie algebra, with "Lie group" (in a weakened sense) the group of diffeomorphisms of M.
— Based on: Peter W. Michor: Manifolds of mappings for continuum mechanics. In the book: Geometric Continuum Mechanics. Editors: Reuven Segev, Marcelo Epstein. Series: Advances in Continuum Mechanics, Vol. 42. pp. 3-75. Birkhäuser Basel 2020.

15.45 Uhr: Kaffeejause

16.15 Uhr: Vortrag

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Radu Ioan Bot

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