Einladung zum
Würzburger Mathematischen Kolloquium
Julius-Maximilians-Universität Würzburg • Fakultät für Mathematik und Informatik

Irina Markina
University of Bergen, Norway
Prodiprofessor this semester

Diffeomorphisms of unit circle, shape analysis, and some non-linear PDEs

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Raum SE 40, Mathematik Ost, Emil-Fischer-Str. 40, Campus Hubland-Nord

Inhaltsangabe:
In the talk, we explain how univalent functions can be used to analyze plain shapes. In turn, the univalent functions defined on the unit disc are closely related to the group of oriented preserving diffeomorphisms of the unit circle. A moving plain shape gives rise to a curve on the group of diffeomorphisms. The requirement to describe a shape modulo its rotation and/or scaling leads to a curve subordinated to some constraints. A geodesic curve of the motion of a shape is a solution to a non-linear partial differential equation. The choice of metric leads to different PDEs, that are generalizations of equations originated in fluid dynamics, such us inviscid Burgers’ equation, Camassa-Holm, Hunter-Saxton, and KdV.