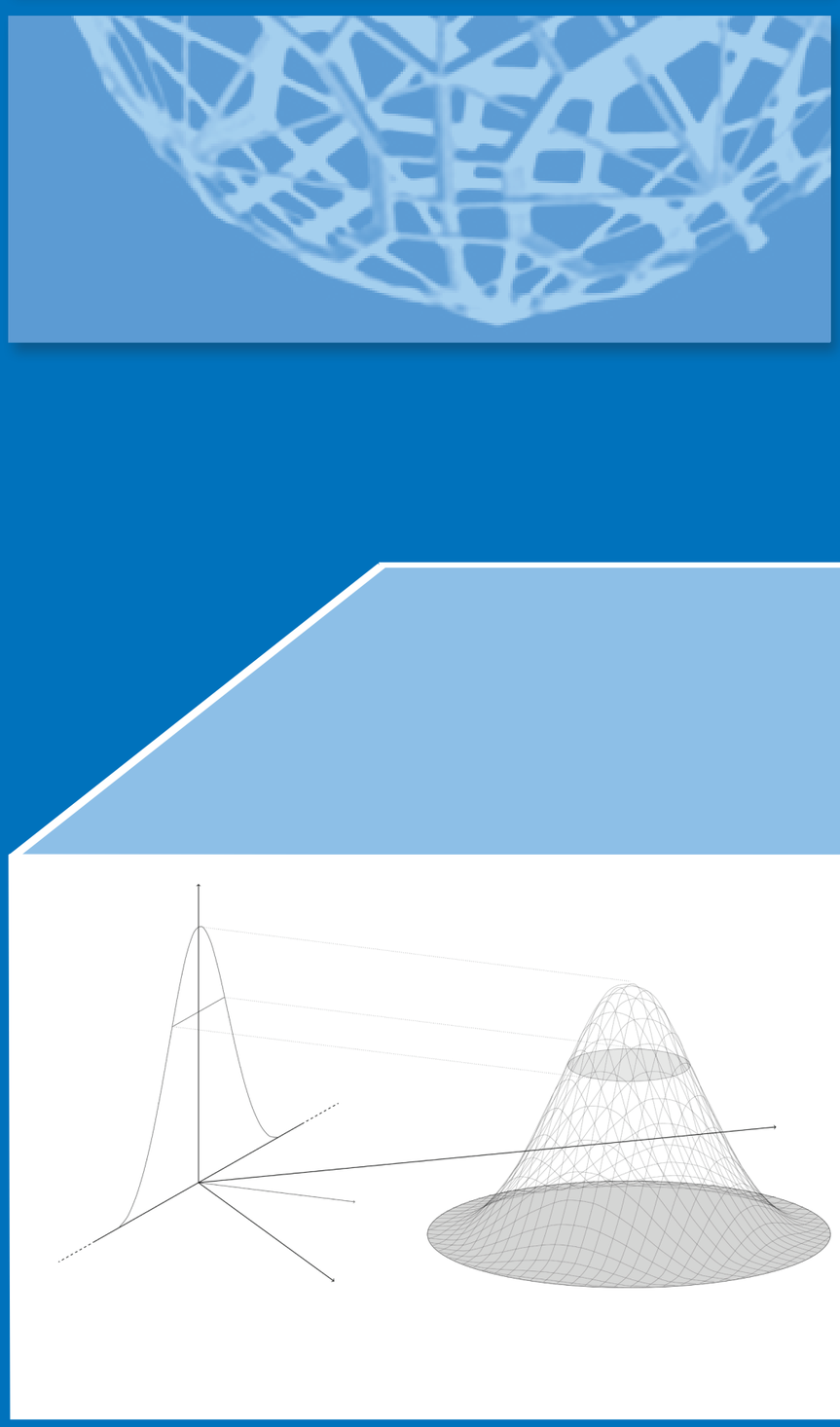
Berlin Mathematical School

BMS Kovalevskaya Colloquium



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Friday 27 January 2017 at 14:15

Tea & Cookies starting at 13:00

BMS Loft, Urania, An der Urania 17, 10787 Berlin

Monika Ludwig

(TU Wien)

Geometric classification

What are the important functionals and functions in geometry and analysis? This question lies at the foundation of geometry, and invariance (or covariance) with respect to some group acting on a space is certainly a desired feature. This is in the tradition of Felix Klein's Erlangen Program from 1872.

A fundamental theorem of Hadwiger classifies all rigid-motion invariant and continuous functionals on convex sets that satisfy the inclusion-exclusion principle. Moreover, Hadwiger's theorem characterizes the $n+1$ intrinsic volumes (volume, surface area, etc.) in Euclidean n-space.

Recently, important functions in analysis and probability theory have been characterized by geometric properties and the inclusion-exclusion property, for example, the Fisher information matrix and the operator that associates with a function to get its optimal Sobolev norm. In her talk, Ludwig will give an overview of such classification results in geometry and analysis.

Monika Ludwig did her PhD and habilitation at the Technische Universität Wien in 1994 and 2000, respectively. From 1994 until 2007, she was an assistant and associate professor at TU Wien. From 2007 to 2010, she was a professor at the Polytechnic Institute of New York University. Ludwig returned to the TU Wien as a full professor in 2010. Since 2012, she has been a fellow of the American Mathematical Society and, since 2013, a full member of the Austrian Academy of Sciences. The focus of her research is convex geometry and geometric analysis.

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