



Berlin  
Mathematical  
School

## BMS Kovalevskaya Colloquium

Friday 10 November 2017 at 14:15

*Tea & Cookies starting at 13:00*

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

### Ilaria Perugia

*(U Vienna)*

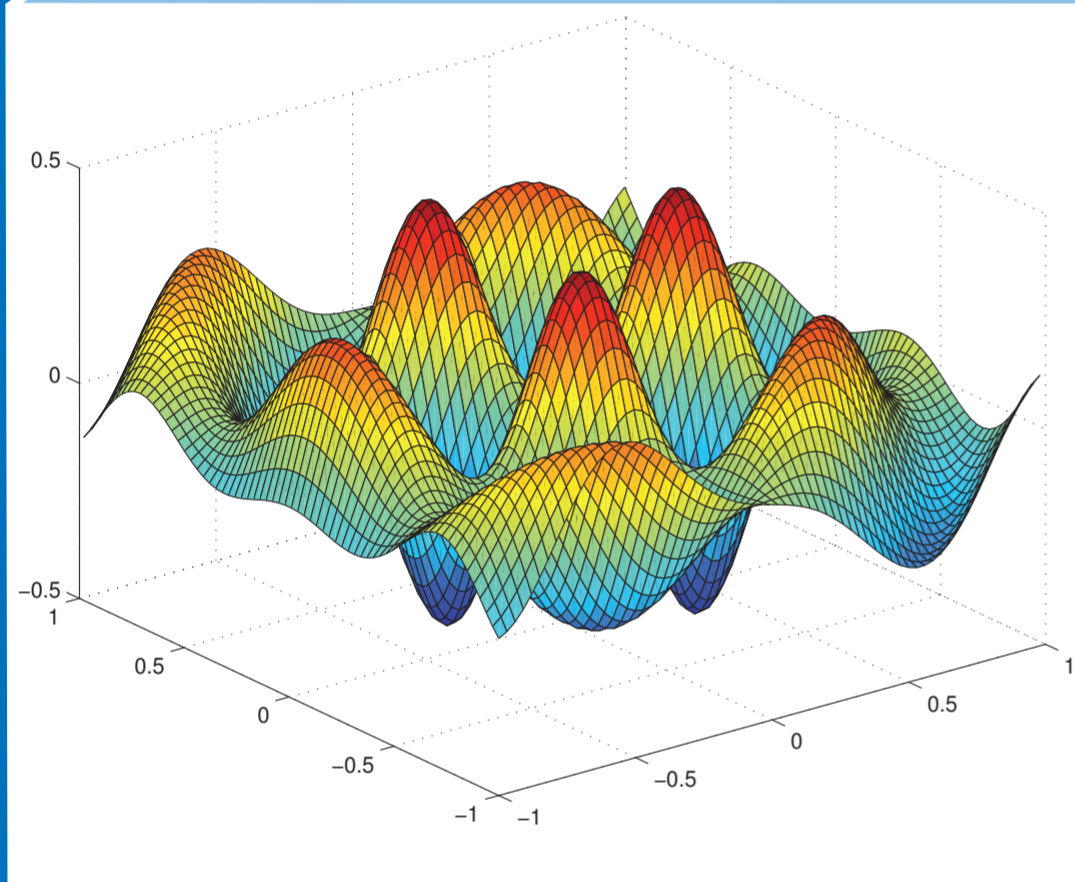
#### Trefftz finite elements

A wide variety of natural, technological, and social phenomena are mathematically described in terms of partial differential equations. They are often too complicated to be solved analytically, and that is where numerical methods come into play. Finite elements are a powerful, flexible, and robust class of methods for the numerical approximation of solutions to partial differential equations. In their standard version, they are based on piecewise polynomial functions on a partition of the domain of interest. Continuity requirements conform to the regularity of the exact solutions.

Over the last few years, new methods that break the constraints of the classic finite element paradigm have been developed. They are meant to better reproduce physical properties of the exact solutions, to enhance stability, and to improve accuracy vs. computational cost.

In her lecture, Perugia will focus on discontinuous finite element methods based on Trefftz functions, namely functions belonging to the kernel of the differential operator, and on their application to wave propagation problems.

Ilaria Perugia is an Italian mathematician and professor of numerics of PDEs at the University of Vienna. After completing her PhD at the University of Milan in 1998, she held posts at the University of Pavia, as well as visiting positions at the University of Minnesota and at ETH Zürich. Her honors include her current appointment as deputy director of the Erwin Schrödinger International Institute for Mathematics and Physics (ESI) in Vienna.



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