



Berlin
Mathematical
School

BMS Friday Colloquium

Friday 13 December 2013 at 14:15

Tea & Cookies starting at 13:00

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

Felix Otto

(Max Planck Institute, Leipzig)

Playing with Partial Differential Equations

The goal of this talk is to provide, with help of many numerical experiments, an intuitive understanding of the Kuramoto-Sivashinsky equation (KS), a partial differential equation (PDE) that is easy to write down but has a surprisingly complex behavior.

In his talk, Otto will start by explaining how KS arises, among many other contexts, from a model in crystal growth. He will discuss how the interaction of all three terms in KS is necessary to generate the complex behavior: two out of the three terms only lead to trivial long-time asymptotics. He will then explain in which sense the behavior of the solutions to KS is complex: butterfly effect, equipartition of energy, time correlations. If time permits, he will also address a contribution to a rigorous, but very partial, understanding by traditional PDE methods.

Felix Otto is a German mathematician and specializes in partial differential equations. He gained his PhD at the University of Bonn in 1993. After postdoctoral studies at the Courant Institute of Mathematical Sciences (NYU) and at Carnegie Mellon University, he became a professor at the University of California at Santa Barbara in 1997. From 1999 to 2010 he was professor for applied mathematics at the University of Bonn, and currently serves as one of the directors of the Max Planck Institute for Mathematics in the Sciences, Leipzig. In 2006, he received the Gottfried Wilhelm Leibniz Prize of the Deutsche Forschungsgemeinschaft, the highest honour awarded in German research.