

# **BMS Friday Colloquium**



# Friday 3 May 2013 at 14:15

*Tea & Cookies starting at 13:00* 

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

# László Székelyhidi Jr.

(U Leipzig)



#### Bending Surfaces and Turbulent Energy Cascades

One of the cornerstones of the theory of 3-dimensional turbulence is the idea of an energy cascade: in a turbulent fluid the energy is transferred successively to smaller and smaller scales by inertial forces until at the smallest scale it is transferred to heat by viscous dissipation. A consequence is the so-called dissipation anomaly.

Although as a heuristic explanation the energy cascade is widely accepted by the community, few rigorous results are known. This is also closely related to a famous conjecture of Onsager from 1949 and to Kolmogorov's theory of turbulence.

In joint work with Camillo De Lellis, Székelyhidi interprets this cascade using an old idea of John Nash and obtains a method of construction, which can be seen as a "hard" PDE version of Gromov's convex integration. In his talk, Székelyhidi will recall the result of Nash on isometric embeddings, explain some basics of 3D turbulence and report on current progress regarding Onsager's conjecture.

László Székelyhidi Jr. is a professor of mathematics at Leipzig University and specializes in partial differential equations and calculus of variations. Born in Hungary in 1977, he gained his PhD in 2003 at the Max Planck Institute for Mathematics in the Sciences in Leipzig. Between 2003 and 2007, he held post-doctoral positions at IAS Princeton and ETH Zürich, and became a Heinz Hopf Lecturer at ETH. He was appointed the first Bonn Junior Fellow in 2007, an associate professor position that he held until 2011, when he was appointed to a professorship in Leipzig.

### www.math-berlin.de