



Berlin
Mathematical
School

BMS Friday Colloquium

Friday 10 February 2017 at 14:15

Tea & Cookies starting at 13:00

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

Endre Süli

(U Oxford)

Discontinuous Galerkin Finite Element Methods: Stability, Accuracy, Adaptivity

Discontinuous Galerkin Finite Element Methods (DGFEMs) were introduced in the early 1970s for the numerical solution of first-order hyperbolic problems. Simultaneously, but independently, they were proposed as nonstandard schemes for the approximation of second-order elliptic equations. The recent upsurge of interest in this class of techniques has been stimulated by the computational convenience of DGFEMs due to their high degree of locality, the need to approximate advection-diffusion problems without excessive numerical stabilization, the necessity to accommodate high-order hp-version discretizations for first-order hyperbolic equations, and the desire to handle nonlinear hyperbolic problems in a locally conservative manner and without auxiliary numerical stabilization.

In his lecture, Professor Süli will review recent developments in the field, including the question of hp-adaptivity. He will also survey some new results concerning the discontinuous Galerkin finite element approximation of second-order partial differential equations in nondivergence form and fully nonlinear partial differential equations, such as Hamilton-Jacobi-Bellman equations.

Endre Süli is Professor of Numerical Analysis at the University of Oxford. He completed his PhD at the University of Belgrade in 1985 and received an MA from Oxford in the same year. He was an invited speaker at the International Congress of Mathematicians (2006) and is a Foreign Member of the Serbian Academy of Sciences and Arts (2009). Other notable awards include Fellow of the European Academy of Sciences (2010) and SIAM Fellow (2016). Professor Süli became a member of the BMS Scientific Advisory Board in 2016.

