Mathematisches Kolloquium

Am Freitag, dem 05. Mai 2017 spricht um 14 Uhr c. t. im Hörsaal IV
der Fachrichtung Mathematik (Gebäude E2 4)

Prof. Dr. Christian Klein
Université de Bourgogne

über das Thema:

Dispersive shocks and blow-up

Abstract: Nonlinear dispersive partial differential equations appear in applications in hydrodynamics, nonlinear optics, plasma physics, Bose-Einstein condensates,... whenever dispersion dominates dissipation. Despite their omnipresence in applications, their mathematical understanding is far less complete than for dissipative equations. This is due to challenging features of the solutions to these equations:

- solitons are particle-like solutions where effects of the nonlinearity and the dispersion balance. It is conjectured that stable solitons appear in the long-time behavior of generic solutions to the equation.

- zones of rapid modulated oscillations called dispersive shock waves appear near shocks of the corresponding dispersionless equations.

- in cases where the nonlinearity dominates dispersion, a blow-up, i.e., a loss of regularity of the solution, is possible in finite time.

Asymptotic and numerical descriptions of dispersive shocks and blow-ups are demanding and could so far only be given for certain cases. The talk aims at a review of these features and of recent attempts to address them.

Der Gast wird von Prof. Dr. Mark Groves betreut.

Alle Interessenten sind zum Vortrag herzlich eingeladen.

Kaffee und Tee ab 13.45 Uhr im Konferenzraum der Mathematik   (Erdgeschoss, Raum 103)

Die Dozenten der Mathematik