Bernoullis Tafelrunde

Graduate Student Seminar

Monday, 2 May 2022, 12:15-13:00

Hybrid seminar
Seminar room 05.001, Spiegelgasse 5 / Zoom

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Complete Blow-up in Reaction-Diffusion Equations

Abstract

Nonlinear parabolic partial differential equations, so called reaction-diffusion equations, are used to model many evolutionary processes in physics and applied sciences. Compared to linear equations, the nonlinearity poses some unique challenges in the mathematical analysis of these equations. In this talk we are going to focus on one of the most remarkable properties that occurs in nonlinear equations but which is absent in the linear theory: The formation of singularities starting from smooth data, also known as blow-ups. We are going to look at what a blow-up is, what types of blow-ups there are, and how they relate to real world physical problems.