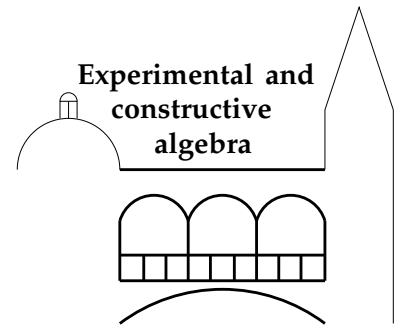


Graduiertenkolleg

Experimentelle und konstruktive Algebra



Kolloquiumsvortrag

Dienstag, 5. Dezember 2017, 14:00 Uhr, Hörsaal III

NICLAS KRUFF (LEHRSTUHL A FÜR MATHEMATIK):
Coordinate-independent criteria for Hopf bifurcations

Investigating parameter depending ordinary differential equations is important when studying inter alia chemical reactions networks or predator-prey systems. In plenty of applications one is interested in the local behaviour of a ODE system near a stationary point. In order to gain some information about the local situation it is worth it to study invariant sets. In the Hopf situation there is a pair of complex conjugated eigenvalues of the linear part of the system that crosses the imaginary axis and a limit cycle arises. Using some theoretical results on Poincaré-Dulac normal forms on invariant manifolds (NFIM), it turns out that the existence and the local dynamical behaviour of the limit cycle, in the Hopf situation, depends on certain coefficients. In this talk I will first give the theoretical background of Hopf bifurcations including facts about vector fields on NFIMs as well as some basic results on solution preserving maps. In the main part I will present a new method in order to determine critical parameter values from which a Hopf bifurcation emanates and moreover I will show an approach to characterize the nature of the bifurcation.

Wir laden alle Interessierten herzlich ein.