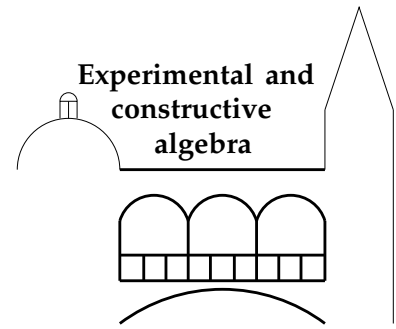


Graduiertenkolleg

Experimentelle und konstruktive Algebra



Kolloquiumsvortrag

Dienstag, 27. Juni 2017, 14:00 Uhr, SeMath

CHRISTIAN LAX (LEHRSTUHL A FÜR MATHEMATIK):

The Rosenzweig-MacArthur system via reduction of an individual based model

The Rosenzweig-MacArthur system is a well-known predator-prey model. In the usual derivation, the interaction terms in the differential equation are essentially based on considering handling time vs. search time. Building on joint work with V. Liebscher (Univ. Greifswald), S. Walcher, N. Kruff, I will introduce a different derivation of this model in the talk, starting from first principles (a stochastic mass action model which leads to a individual based three-dimensional ODE system) and a Tikhonov-Fenichel reduction for certain small parameters. Moreover, with the help of the theory of Tikhonov-Fenichel parameter values it is possible to determine all possible Tikhonov-Fenichel reductions of the individual based system that lead to two-dimensional reduced systems. Lastly, I will shortly discuss two of these reductions, which exhibit interesting features (e.g. slow-fast cycles).

Wir laden alle Interessierten herzlich ein.