

Local presentation of a Research Project on
Effective Methods in Dynamical Systems

by A. Jorba and C. Simó (University of Barcelona)

Thursday June 18 from 6:10 to 6:50 pm

in the Main Conference Room

Contents:

Dynamical Systems, since the pioneer beginning with Celestial Mechanics, is an area of Mathematics interested both in qualitative and quantitative aspects. At present time it is hard to separate the ones from the other.

A (partial) list of topics which require Effective Methods, combining symbolic and numeric tools, can be:

a) Location of fixed points, stability, continuation with respect to parameters, analysis of bifurcations. This includes periodic orbits of discrete maps and flows.

b) Computation of normal forms, periodic solutions, invariant tori, stable/unstable/centre manifolds. Regularity properties. Detection of analytic/Gevrey character. From local to global. Bounds on errors.

c) Automatic differentiation methods. Numerical integration of ODE by Taylor methods. Jet transport. Applications to objects away from any simple solution and to integrability problems.