

Dynamical Systems Seminar

Date. October 31st, 14h30 (Friday)

Place. Room FC1.031

Speaker. Isabel S. Labouriau (Centro de Matemática da Universidade do Porto)

Title. Global planar dynamics with star nodes: beyond Hilbert's 16th problem

Abstract.

This is a complete study of the dynamics of polynomial planar vector fields whose linear part is a multiple of the identity (the origin is a *star node*) and whose nonlinear part is a homogeneous polynomial. It extends previous work by other authors that was mainly concerned with the existence and number of limit cycles (about Hilbert's 16th problem). We show that the behaviour at infinity completely determines the dynamics on the plane. The general results are also applied to two classes of examples where the nonlinearities have degrees 2 and 3, for which we provide a complete set of phase portraits.

Joint work with Begoña Alarcón (UFF, Brazil) and Sofia Castro (CMUP and FEP.UP).

There will be a coffee break after the seminar.