PREFACE

The study of differential equations began with the methods introduced by Newton and Leibnitz in the last quarter of the 17th century. In the middle of the 18th century the development and evolution of these methods allowed differential equations to become a new branch of mathematics, having many subbranches, such as calculus of variations, celestial mechanics, the theory of oscillators, elasticity, fluid dynamics, etc. In the 19th century the development of mathematical analysis was parallel to that of differential equations. The basic theorems of the theory of ordinary differential equations, about existence and uniqueness of solutions, continuous dependence on initial conditions and parameters, etc., appeared at that time. At the end of the 19th century the work of Poincaré provided the basis of the qualitative theory of ordinary differential equations. This theory investigates the global description of the solutions (phase portrait, asymptotic behaviour, etc.) and the effect of small perturbation on the initial conditions and parameters on the solutions (stability, bifurcation, etc.). Now a century after Poincaré's work, the main topics of the theory of ordinary differential equations are essentially the same.

The papers in this issue grew out of the *Symposium on Planar Vector Fields*, which was held at the Institut d'Estudis Ilerdencs in Lleida, Spain from November 24th to 27th, 1996. The symposium gathered together more than 70 researchers from 15 countries. The main interest of the symposium was the qualitative theory of planar vector fields. Many trends in this field of research are represented by bifurcation analysis of limit cycles, periodic limit sets, singularities, etc.; existence of algebraic invariant curves for polynomial vector fields; the centre-focus problem; isochronous centers; desingularization; finite cyclicity; integrability, etc. The aim of the symposium was two-fold: to survey recent progress made in this field, and to explore new directions.

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