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Hamiltonian Dynamical Systems
Hamiltonian Dynamical Systems

AMS-IMS-SIAM Joint Summer Research Conference on Hamiltonian Dynamical Systems
June 21–27, 1987
University of Colorado

Kenneth R. Meyer
Donald G. Saari
Editors

American Mathematical Society
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PREFACE

In June, 1987, a one-week conference on Hamiltonian Dynamics was held at the University of Colorado in Boulder, Colorado. This conference was one of the series organized under the auspices of the AMS-SIAM-IMS Conference Series. The organizing committee consisted of Ken Meyer (Co-Chair), Don Saari (Co-Chair), Richard Hall, Tudor Ratiu, and Alan Weinstein. The articles in this volume are contributions by participants whose papers, after a review, were viewed as contributing to this research area and representing the general thrust of the conference. The papers vary from being essentially expository descriptions of recent developments to being fairly technical with new results. Collectively, they provide a good survey of contemporary work in this area.

It is highly appropriate that this conference was held during the summer of 1987 -- the three hundredth anniversary of the publication of I. Newton's *Principia Mathematica*. (We would like to claim that this timing was due to careful planning and design; in fact, it was purely by coincidence.) *Principia*, which developed and applied the science of dynamics to the emerging problems of orbital mechanics, gave birth to the field of celestial mechanics and, subsequently, to Hamiltonian dynamics. The area of celestial mechanics was well represented at this conference. Many of the talks emphasized either topics directly concerned with the Newtonian n-body problem, the three body problem, the artificial earth satellite, etc., or those dynamical issues, such as integrability, KAM, and extensions of the Poincare-Birkhoff results, that emerged from celestial mechanics and extend to wider classes of dynamical systems.
In addition to topics related to celestial mechanics, this conference brought together researchers from a wide spectrum of areas of contemporary research in Hamiltonian dynamics. Just a small sample includes the existence of periodic orbits with variation methods, twist and annulus maps, stable manifold theory, almost periodic motion, heteroclinic and homoclinic orbits, etc. It is our hope that by bringing together papers from such a diverse range of topics will serve as a stimulant for further development in Hamiltonian dynamics.

Kenneth R. Meyer
Cincinnati, Ohio

Donald G. Saari
Evanston, Illinois

March, 1988
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