

PROCEEDINGS OF THE REGIONAL CONFERENCE ON THE APPLICATION OF TOPOLOGICAL METHODS IN DIFFERENTIAL EQUATIONS

Introduction. The present issue of the Rocky Mountain Journal of Mathematics contains selected proceedings of the regional conference on the *Application of Topological Methods in Ordinary and Partial Differential Equations* which was held on the campus of the University of Colorado in Boulder from May 31 through June 4, 1976. This conference was one of a series of five-day regional conferences held at various locations geographically distributed throughout the United States. These conferences are funded by the Mathematical Sciences Section of the National Science Foundation (NSF) with supporting services provided by the Conference Board of the Mathematical Sciences (CBMS) through the medium of a contract with the National Science Foundation. The objective of these conferences is to stimulate and broaden research activity across the spectrum of the mathematical and computer sciences.

There were seventy-five participants at the conference. The principal lecturer was Professor Charles Conley of the University of Wisconsin. There were five invited lecturers: Michael Crandall, University of Wisconsin; Paul Fife, University of Arizona; Jean Mawhin, Université Catholique de Louvain (Belgium); R. Clark Robinson, Northwestern University; and Jim Yorke, University of Maryland. The other sixty-nine invited participants were primarily drawn from the broad geographic region around Boulder.

Professor Conley delivered two one-hour lectures each day. The theme of his lectures could be described as applications of topological theorems to questions concerning the existence of orbits connecting equilibrium solutions for differential equations and generalizations of such ideas.

A prototype of the techniques discussed was the "shooting method" which makes use of the topological property of connectedness to prove the existence of solutions to certain kinds of boundary value problems. A simple observation of T. Wazewski places the shooting method as the most elementary instance of a fundamental principle which brings to bear all the topological invariants of homotopy theory. The first three lectures by Professor Conley were devoted to the Wazewski principle and its applications. One such example was concerned with the existence of a standing wave solution of the Kolmogoroff equation $u_t = u_{xx} + p(x)u(1 - u)$. In the next three lectures, the notion of