

Lecture Notes in Mathematics

Edited by A. Dold and B. Eckmann

Subseries: Fondazione C.I.M.E., Firenze

Adviser: Roberto Conti

1057

Bifurcation Theory and Applications

Lectures given at the 2nd 1983 Session of the
Centro Internazionale Matematico Estivo (C.I.M.E.)
held at Montecatini, Italy, June 24 – July 2, 1983

Edited by L. Salvadori



Springer-Verlag
Berlin Heidelberg New York Tokyo 1984

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AMS Subject Classification (1980): 34D20, 34D30, 35B32, 58F10, 58F14,
76D05, 92A15

ISBN 3-540-12931-6 Springer-Verlag Berlin Heidelberg New York Tokyo
ISBN 0-387-12931-6 Springer-Verlag New York Heidelberg Berlin Tokyo

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Printed in Germany

Printing and binding: Beltz Offsetdruck, Hemsbach/Bergstr.
2146/3140-543210

PREFACE

An international summer course on Bifurcation Theory and Applications was held at Montecatini, Italy, June 24–July 2, 1983, organized by the CIME Foundation. The purpose was to feature the fundamental methods and the recent advances of the general theory, and to depict its role in approaching the analysis of natural phenomena. The importance of the connections between stability and bifurcation problems was constantly stressed. Thus the course also provided notions and results that complement previous courses organized by the CIME and other Italian summer schools on the subject of stability.

The general plan was to have four sets of lectures devoted to: (i) a general introduction to dynamic bifurcation; (ii) bifurcation problems for mechanical systems with a finite number of degrees of freedom; (iii) bifurcation problems in Hydrodynamics; (iv) bifurcation problems in Biomathematics. They were in charge of Professors J. K. Hale, J. J. Duistermaat, G. Iooss, and S. Busenberg respectively. The present volume consists of the texts of these lectures. The texts of two additional lectures delivered by Professors W. S. Loud and A. Vanderbauwhede are also included.

I wish to express my thanks to the lecturers and all the participants for their contribution to the success of the course. I wish also to thank warmly Professors R. Cóni and A. Moro, Director and Secretary of CIME, for their help and assistance in planning and organizing the course.

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