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# Oscillation and Dynamics in Delay Equations



American Mathematical Society

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# Oscillation and Dynamics in Delay Equations

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# CONTEMPORARY MATHEMATICS

129

# Oscillation and Dynamics in Delay Equations

Proceedings of an AMS Special Session held January 16–19, 1991

> John R. Graef Jack K. Hale Editors



American Mathematical Society Providence, Rhode Island

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### Preface

Oscillation theory and dynamical systems have long been rich and active areas of mathematical research. The papers in this volume are based on presentations at the Special Session of the same title held at the 97th Annual Meeting of the American Mathematical Society, in San Francisco, CA, in January 1991. With a special emphasis on delay equations, the papers cover a broad range of topics in ordinary, partial, and difference equations, and include applications to problems in commodity prices, biological modeling, and number theory. All the papers in this volume are in final form, and no versions of them will be submitted for publication elsewhere. The editors wish to express their appreciation to the authors of each paper for their assistance with the preparation of these proceedings.

> John R. Graef Jack K. Hale

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### Oscillation and Dynamics in Delay Equations John R. Graef and Jack K. Hale, Editors

Oscillation theory and dynamical systems have long been rich and active areas of research. Containing frontier contributions by some of the leaders in the field, this book brings together papers based on presentations at the AMS meeting in San Francisco in January 1991. With special emphasis on delay equations, the papers cover a broad range of topics in ordinary, partial, and difference equations and include applications to problems in commodity prices, biological modeling, and number theory. The book would be of interest to graduate students and researchers in mathematics or those in other fields who have an interest in delay equations and their applications.

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