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Berezovski, Arkadi, Soomere, Tarmo (Eds.)

Applied Wave Mathematics II

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- The contributions describe the approaches in an understandable way and can be used for educational purposes

This book gathers contributions on various aspects of the theory and applications of linear and nonlinear waves and associated phenomena, as well as approaches developed in a global partnership of researchers with the national Centre of Excellence in Nonlinear Studies (CENS) at the Department of Cybernetics of Tallinn University of Technology in Estonia. The papers chiefly focus on the role of mathematics in the analysis of wave phenomena. They highlight the complexity of related topics concerning wave generation, propagation, transformation and impact in solids, gases, fluids and human tissues, while also sharing insights into selected mathematical methods for the analytical and numerical treatment of complex phenomena. In addition, the contributions derive advanced mathematical models, share innovative ideas on computing, and present novel applications for a number of research fields where both linear and nonlinear wave problems play an important role. The papers are written in a tutorial style, intended for non-specialist researchers and students. The authors first describe the basics of a problem that is currently of interest in the scientific community, discuss the state of the art in related research, and then share their own experiences in tackling the problem. Each chapter highlights the importance of applied mathematics for central issues in the study of waves and associated complex phenomena in different media. The topics range from basic principles of wave mechanics up to the mathematics of Planet Earth in the broadest sense, including contemporary challenges in the mathematics of society. In turn, the areas of application range from classic ocean wave mathematics to material science, and to human nerves and tissues. All contributions describe the approaches in a straightforward manner, making them ideal material for educational purposes, e.g. for courses, master class lectures, or seminar presentations.

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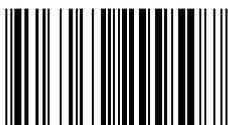
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