Berichte aus der Mathematik

Yongqi Wang
Kolumban Hutter (Eds.)

Trends in Applications of Mathematics to Mechanics

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Phone: 0049/2407/9596-0 • Telefax: 0049/2407/9596-9
Internet: www.shaker.de • eMail: info@shaker.de

Zusammenfassung

This book on **Trends in Applications of Mathematics to Mechanics** consists of peer-reviewed articles and reviews presented at the *International Symposium on Trends in Applications of Mathematics to Mechanics* (STAMM), held at the Lufthansa training centre, Seeheim, Germany, August 22 – 28, 2004. It is the fourteenth in a series of meetings under the auspices of the *International Society for the Interaction of Mechanics and Mathematics* (ISIMM).

This symposium was organized by the Institute of Mechanics at Darmstadt University of Technology (TUD) and the International Society for the Interaction of Mathematics and Mechanics (ISIMM). 120 scientists from 25 countries attended this symposium.

The symposium served both as a forum for the review and dissemination of recent scientific and technical information related to all aspects of the interaction of mathematics and mechanics, and as a means of encouraging cooperation and stimulation for future research. The topics that are particularly treated, may be headed as follows:

- Linear and nonlinear waves in continuous media;
- Granular and particle laden media;
- Phase transitions, hysteresis;
- Poroelastic, granular waves;
- Elasto-visco plasticity, rate-independent materials;
- Polar, nonpolar elasticity;
- Fluid, convection-diffusion, turbulence;
- Non-Newtonian fluids, liquid crystals;
- Thermodynamics (extended/normal), Statistical mechanics;
- (Geophysical) Fluid Dynamics, Boundary layers;
- Discrete Element Methods (DEM) / Numerics;
- Magnetoelectro mechanics;
- General continuum mechanics;
- Beams, plates, shells, thin sheets, thin layers;
- Inhomogeneities;
- Crack propagation, fracture, Ice;
- Gradient and Cosserat theories;
- Structure fluid interactions;
- Miscellaneous.

The 64 selected papers from the contributing papers are presented together as a formal book, because the content is of general interest to graduate students, researchers and engineers in universities and research institutions involved in mathematics and mechanics.