



EMERGING TRENDS IN APPLIED  
MATHEMATICS AND MECHANICS

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BOOK OF ABSTRACTS



Ministry of Science  
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JAGIELLONIAN UNIVERSITY  
IN KRAKOW



Kraków



NICOLAUS COPERNICUS  
UNIVERSITY  
IN TORUŃ  
Juliusz P. Schauder  
Center for Nonlinear Studies

## **Minisymposium 4:**

Non-Classical Problems in Structural Dynamics of Continuous Media

organized by

Czesław Bajer

*Polish Academy of Sciences, Warsaw, Poland*

Modern structures should meet requirements that exceed commonly applied strength criteria. Dynamic phenomena carry strong restrictions but also new possibilities that allows us exceed current limitations. We focus our research on new materials that exhibit special rheological properties, new structures based on untypical inner (microscopic) or outer (macroscopic) geometry or structures that are controlled by interactions with their elements or with the base. In such extraordinary states structures can carry higher loads, as well as resist to instantaneous load peaks and first of all they can increase the safety and decrease harmful or inconvenient impact on environment. We consider differential equations that describe the influence of inertia in moving load problems, the control of sensitive structures under instantaneous impacts, the efficiency of non-classical materials that exhibit controllable properties and programmable metamaterials that allows modification of constitutive relationships during the deformation process.