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Editorial

Special Issue of *Mathematics*: Analytical and Numerical Methods for Linear and Nonlinear Analysis of Structures at Macro, Micro and Nano Scale

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The mathematical models of physical phenomena are based on the fundamental scientific laws of physics. Mathematical models consist of a combination of algebraic and differential (sometimes even integral) equations. Mathematical models of structural elements (e.g., beams, plates, and shells) based on continuum assumption require a proper treatment of the kinematic, kinetic, and constitutive issues accounting for possible sources of nonlocal and nonclassical continuum mechanics concepts and solving associated boundary value problems. The development of mathematical models and their solutions via analytical and numerical methods have been the focus of many researchers. In particular, the mechanical response of ultrasmall structures has received a great deal of attention because of their wide applications in high-tech devices, such as nanoelectromechanical and microelectromechanical systems.

This Special Issue was aimed at collecting high-quality papers on the latest developments, techniques, and approaches for the modeling and simulation of the mechanical behavior of structures at macro-, micro-, and nanoscales. Advanced accurate numerical and analytical methods to solve PDEs were of high interest. The vibrational response, buckling instability, wave propagation analysis, and static deformation of structural components across macro-, micro-, and nanoscales were covered in this Special Issue.

Eight research papers [1–8] are published in the presented Special Issue. Topics of published papers cover analyses of different engineering problems of structures at diverse scales. The range of themes addressed in this Special Issue is certainly not exhaustive. The scope of applications of materials and structures in diverse environments has been broadening rapidly. Many more complex theoretical and numerical investigations are still needed. We hope that this Special Issue will deliver in providing the reader with a state-of-the-art perspective on some current research thrusts in using different techniques for linear and nonlinear analysis of the mechanics of structures.

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