

Preface

This Special Issue is the last in a series that was primarily based on improved and updated papers presented at the *5th International Symposium on Fluid–Structure Interaction, Aeroelasticity, Flow-Induced Vibration and Noise*, held in conjunction with the ASME IMECE in New Orleans, USA, in November 2002.

The focus of this issue is on *Aeroelasticity*. Aeroelasticity deals with the behavior of a vehicle in the airstream wherein there is significant reciprocal interaction between elastic, inertial, and flow-induced loads. The field of aeroelasticity continues to play a major role in the design and analysis of aerospace vehicles. The papers selected for this Special Issue contain a carefully selected sample that spans different aerospace applications. The papers encompass nonlinear modeling of aeroelastic instabilities and maneuver response in fixed wing vehicles, active aeroelasticity and scaling laws of rotary wing vehicles, forced response and stability analysis of launch and hypersonic vehicles, and flutter instability in turbomachinery. The increasing challenges in nonlinear aeroelastic modeling and the pursuit of reduced order models are discussed in some of the papers. Others address the modeling of active aeroelastic control of lifting surfaces and the related scaling laws that allow extrapolation of wind tunnel results to full-scale vehicles. Finally, new advances in computational aeroelasticity enabling complex flow modeling and computation of transonic/hypersonic aeroelastic response of complete vehicles are also covered in this Special Issue. In summary, these papers offer the readers of the *Journal of Fluids and Structures* a representative cross section of current problems of interest in the field of Aeroelasticity.

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