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Dynamics of Compressible Viscous Fluid

Stability, Oscillations and Optimization of Systems: Volume 3
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This volume is the first monograph on Dynamics of Compressible Viscous Fluid in world scientific literature as applied to the theory of small vibrations (motions) of rigid and elastic bodies in compressible viscous fluid. The methods of analysis based on the proposed general solutions of linearized Navier--Stokes equations in vector or scalar forms are developed. New problems are considered:

- forced harmonic vibrations and nonstationary motions of rigid bodies in moving and at rest compressible viscous fluid
- dynamics of rigid bodies in at rest compressible viscous fluid under the action of the radiation forces arising as the result of the interaction with a acoustic harmonic waves
- wave propagation in elastic bodies with initial (residual) stresses and in thin-walled elastic cylindrical shell interacting with a compressible viscous fluid

The well-known results for more simple models of fluid (incompressible viscous, ideal compressible and ideal incompressible) follow from above mentioned results for compressible viscous fluid by limiting transitions. The monograph is devoted to scientists, lecturers, engineers, postgraduates and students in wave dynamics, continuum mechanics and fluid mechanics.

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