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boundaries; 1.4. Density of energy and energy flow, energy conservation law; 1.4.1. Complex representation in the Fourier domain; 1.4.2. Energy density in an "ideal" fluid
1.4.3. Energy flow and acoustic intensity1.4.4. Energy conservation law; Chapter 1: Appendix. Some General Comments on Thermodynamics; A. 1. Thermodynamic equilibrium and equation of state; A.2. Digression on functions of multiple variables (study case of two variables); A.2.1. Implicit functions; A.2.2. Total exact differential form; Chapter 2. Equations of Motion in Dissipative Fluid; 2.1. Introduction; 2.2. Propagation in viscous fluid: Navier-Stokes equation; 2.2.1. Deformation and strain tensor; 2.2.2. Stress tensor; 2.2.3. Expression of the fundamental law of dynamics
2.3. Heat propagation: Fourier equation2.4. Molecular thermal relaxation; 2.4.1. Nature of the phenomenon; 2.4.2. Internal energy, energy of translation, of rotation and of vibration of molecules; 2.4.3. Molecular relaxation: delay of molecular vibrations; 2.5. Problems of linear acoustics in dissipative fluid at rest; 2.5.1. Propagation equations in linear acoustics.; 2.5.2. Approach to determine the solutions; 2.5.3. Approach of the solutions in presence of acoustic sources; 2.5.4. Boundary conditions
Chapter 2: Appendix. Equations of continuity and equations at the thermomechanic discontinuities in continuous mediaA.1. Introduction; A.1.1. Material derivative of volume integrals; A.1.2. Generalization; A. 2. Equations of continuity; A.2.1. Mass conservation equation; A.2.2. Equation of impulse continuity; A.2.3. Equation of entropy continuity; A.2.4. Equation of energy continuity; A.3. Equations at discontinuities in mechanics; A.3.1. Introduction; A.3.2. Application to the equation of impulse conservation; A.3.3. Other conditions at discontinuities
A.4. Examples of application of the equations at discontinuities in mechanics: interface conditions

Sommario/riassunto

The central theme of the chapters is acoustic propagation in fluid media, dissipative or non-dissipative, homogeneous or nonhomogeneous, infinite or limited, placing particular emphasis on the theoretical formulation of the problems considered.