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4.9.3 Strong Ellipticity and Hadamard Inequality; 4.9.4 Ordinary Ellipticity; 4.10 Micropolar Fluid; 4.11 Some Sources of Constitutive Equations for Micropolar Materials; References; 5 Strong Ellipticity and Acceleration Waves in Micropolar Continuum; 5.1 Thermoconductivity Equation in the Micropolar Continuum; 5.2 Acceleration Waves; 5.3 Homothermal Acceleration Waves; Appendix A Elements of Tensor Analysis; A.1... Vectors; A.2... Tensor tensor; A.3... Second-Order Tensors second-order tensor; A.4... Higher Order Tensor tensor! higher order; A.5... Basis Transformation; A.6... Polar and Axial Vectors and Tensors vector! axial tensor! axial vector! polar tensor! polar; A.7... Tensor Functions; A.8... Vector and Tensor Fields; A.9... Curves in Space; A.10... Surfaces; Appendix B Elements of Rigid Body Dynamics; Appendix C Elements of Mechanics of Elastic Rods; Appendix D Micropolar Plates and Shells as Two-Dimensional Cosserat Continua; D.1... Kinematics of a Micropolar Shell; D.2... The Virtual Work Principle and Formulation of Boundary Value Problems; D.3... Euler's Motion Laws of a Micropolar Shell; D.4... Constitutive Equations for a Micropolar Shell; D.5... Linear Theory of Micropolar Shells; D.6... Constitutive Restrictions for Micropolar Shells; D.6.1... Linear Theory of Micropolar Shell; D.6.2... Coleman--Noll Inequality for Elastic Shells; Coleman-Noll inequality; D.6.3... Strong Ellipticity and Hadamard Inequality; D.6.4... Strong Ellipticity Condition and Acceleration Waves; acceleration wave; D.6.5... Ordinary Ellipticity; ordinary ellipticity; References; Index

Sommario/riassunto

The book presents foundations of the micropolar continuum mechanics including a short but comprehensive introduction of stress and strain measures, derivation of motion equations and discussion of the difference between Cosserat and classical (Cauchy) continua, and the discussion of more specific problems related to the constitutive modeling, i.e. constitutive inequalities, symmetry groups, acceleration waves, etc.