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| Nota di contenuto | Frontmatter -- Preface -- Basic notation -- Contents -- 1. Introduction -- 2. Generalized formulations of parabolic and hyperbolic problems -- 3. Variational principles in linear elasticity -- 4. Variational statements in structural mechanics -- 5. Ritz method for initial-boundary value problems -- 6. Variational and projection techniques with semi-discretization -- 7. Integrodifferential approach to eigenvalue problems -- 8. Spatial vibrations of elastic beams with convex cross-sections -- 9. Double minimization in optimal control problems -- 10. Semi-discrete approximations in inverse dynamic problems -- 11. Modeling and control in mechatronics -- A. Vectors and tensors -- B. Sobolev spaces -- Bibliography -- Index |
| Sommario/riassunto | This monograph covers new variational and projection methods to study the dynamics within solid structures. To cope with the underlying initial-boundary value problems, the method of integrodifferential relations is employed. Applications and examples in physics, mechanics and control engineering range from natural vibrations or forced motions of elastic and viscoelastic bodies to heat and mass transfer processes. ContentsGeneralized formulations of parabolic and hyperbolic problemsVariational principles in linear elasticityVariational statements in structural mechanicsRitz method for initial-boundary value problemsVariational and projection techniques with semi-discretizationIntegrodifferential approach to eigenvalue |

problemsSpatial vibrations of elastic beams with convex cross-sectionsDouble minimization in optimal control problemsSemi-discrete approximations in inverse dynamic problemsModeling and control in mechatronics