

1. Record Nr.	UNINA9910779318203321
Autore	Kostin G. V
Titolo	Integrodifferential relations in linear elasticity [[electronic resource] /] / by Georgy Viktorovich Kostin, Vasily V.Saurin
Pubbl/distr/stampa	Berlin ; ; Boston, : De Gruyter, c2012
ISBN	1-283-85681-6 3-11-027100-1
Descrizione fisica	1 online resource (292 p.)
Collana	De Gruyter studies in mathematical physics ; ; 10
Classificazione	SK 620
Altri autori (Persone)	SaurinV. V
Disciplina	531.382
Soggetti	Elasticity Plasticity Integro-differential equations
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Frontmatter -- Preface -- Contents -- Chapter 1. Introduction -- Chapter 2. Basic concepts of the linear theory of elasticity -- Chapter 3. Conventional variational principles -- Chapter 4. The method of integrodifferential relations -- Chapter 5. Variational properties of the integrodifferential statements -- Chapter 6. Advance finite element technique -- Chapter 7. Semi-discretization and variational technique -- Chapter 8. An asymptotic approach -- Chapter 9. A projection approach -- Chapter 10. 3D static beam modeling -- Chapter 11. 3D beam vibrations -- Appendix A. Vectors and tensors -- Appendix B. Sobolev spaces -- Bibliography -- Index
Sommario/riassunto	Deformations of elastic bodies are encountered in many areas in science, engineering and technology. In the last decades, various numerical approaches using the finite element technique have been developed, but many are not adequate to address the full complexity. This work treats the elasticity of deformed bodies, including the resulting interior stresses and displacements. Other than comparable books, this work also takes into account that some of constitutive relations can be considered in a weak form. To discuss this problem properly, the method of integrodifferential relations is used, and an advanced numerical technique for stress-strain analysis is presented

and evaluated using various discretization techniques. The methods presented in this book are of importance for almost all elasticity problems in materials science and mechanical engineering.
