1. Record Nr.	UNINA9910814878703321
Autore	Carrera Erasmo
Titolo	Beam structures : classical and advanced theories / / Erasmo Carrera, Gaetano Giunta, Marco Petrolo
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, 2011
ISBN	9786613204554
	9781283204552
	128320455X
	9781119951049
	1119951046
	9781119978565
	1119978564
	9781119978572
	1119978572
Edizione	[1st ed.]
Descrizione fisica	1 online resource (204 p.)
Classificazione	SCI041000
Altri autori (Persone)	GiuntaGaetano
	PetroloMarco
Disciplina	624.1/7723
Soggetti	Girders
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Beam Structures; Contents; About the Authors; Preface; Introduction; References; 1 Fundamental equations of continuous deformable bodies; 1.1 Displacement, strain, and stresses; 1.2 Equilibrium equations in terms of stress components and boundary conditions; 1.3 Strain displacement relations; 1.4 Constitutive relations: Hooke's law; 1.5 Displacement approach via principle of virtual displacements; References; 2 The Euler-Bernoulli and Timoshenko theories; 2.1 The Euler-Bernoulli model; 2.1.1 Displacement field; 2.1.2 Strains; 2.1.3 Stresses and stress resultants; 2.1.4 Elastica
	2.2 The Timoshenko model 2.2.1 Displacement field; 2.2.2 Strains; 2.2.3 Stresses and stress resultants; 2.2.4 Elastica; 2.3 Bending of a cantilever beam: EBBT and TBT solutions; 2.3.1 EBBT solution; 2.3.2 TBT solution; References; 3 A refined beam theory with in-plane stretching: the complete linear expansion case; 3.1 The CLEC

Sommario/riassunto

"Present a new, unified approach to both classical and advanced beam theory that is becoming established and recognised globally as the most important contribution to the field in the last quarter of a centuryBeam Structures: Classical and Advanced Theories proposes a new original unified approach to beam theory that includes practically all classical and advanced models for beams and which has become established and recognised globally as the most important contribution to the field in the last quarter of a century. This approach overcomes the problem of classical formulae that require different formulas for tension, bending, shear and torsion; it can be applied to any beam geometries and loading conditions, reaching a high level of accuracy, and can tackle problems that in most cases are solved by employing plate/shell and 3D formulations.Beam Structures: Classical and Advanced Theories presents both the classical and advanced beam theories in a form that is very suitable for computer implementation It is accompanied by dedicated software MUL2 that is used to obtain the numerical solutions in the book, allowing the reader to reproduce the examples given in the book as well as to solve other problems of their own. The authors also include a number of static and dynamic problems and solutions that serve to further illustrate the advanced theories presented"--