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Autore	Öchsner Andreas
Titolo	One-Dimensional Finite Elements : An Introduction to the FE Method // by Andreas Öchsner, Markus Merkel
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Descrizione fisica	1 online resource (407 p.)
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Soggetti	Mechanics Mechanics, Applied Computer mathematics Mechanical engineering Solid Mechanics Computational Mathematics and Numerical Analysis Mechanical Engineering
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	Motivation for the Finite Element Method -- Bar Element -- Torsion bar -- Bending Element -- General 1D Element -- Plane and Spatial Frame Structures -- Beam with Shear Contribution -- Beams of Composite Materials -- Nonlinear Elasticity -- Plasticity -- Stability (Buckling) -- Dynamics.
Sommario/riassunto	This textbook presents finite element methods using exclusively one-dimensional elements. The aim is to present the complex methodology in an easily understandable but mathematically correct fashion. The approach of one-dimensional elements enables the reader to focus on the understanding of the principles of basic and advanced mechanical problems. The reader easily understands the assumptions and limitations of mechanical modeling as well as the underlying physics without struggling with complex mathematics. But although the description is easy it remains scientifically correct. The approach using only one-dimensional elements covers not only standard problems but allows also for advanced topics like plasticity or

the mechanics of composite materials. Many examples illustrate the concepts and problems at the end of every chapter help to familiarize with the topics.
