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| Autore | Mittelstedt Christian |
| Titolo | Theory of Plates and Shells / / by Christian Mittelstedt |
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| ISBN | 9783662668054 |
| Edizione | [1st ed. 2023.] |
| Descrizione fisica | 1 online resource (583 pages) |
| Disciplina | 624.1776 |
| Soggetti | Mechanics, Applied<br>Solids<br>Engineering design<br>Automotive engineering<br>Aerospace engineering<br>Astronautics<br>Solid Mechanics<br>Engineering Design<br>Automotive Engineering<br>Aerospace Technology and Astronautics |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Includes index. |
| Nota di contenuto | Basics of elasticity theory -- Energy methods of elastostatics -- Isotropic disks in Cartesian coordinates -- Isotropic disks in polar coordinates -- Approximation methods for isotropic disks -- Anisotropic disks -- Kirchhoff plate theory in Cartesian coordinates -- Approximation methods for the Kirchhoff plate -- Kirchhoff plate theory in polar coordinates -- Higher-order plate theories -- Plate buckling -- Geometrically nonlinear analysis -- Laminated Plates -- Introduction to shell structures -- Membrane theory of shells of revolution -- Bending theory of shells of revolution -- Literature. |
| Sommario/riassunto | This book deals with the analysis of plates and shells and is divided into four sections. After briefly introducing the basics of elasticity theory and the energy methods of elastostatics in the first section, the second section is devoted to the statics of disk structures. In addition |

to isotropic disks in Cartesian and polar coordinates, approximation methods and anisotropic disks are also discussed. The following third section deals with plate structures, covering plates in Cartesian and polar coordinates, and also discussing approximation methods and higher-order plate theories. Other chapters in this section discuss plate buckling as well as geometric nonlinear analysis and laminated plates. The fourth and final section of this book is devoted to shells, i.e., curved thin structures, following the common division into membrane theory on the one hand and bending theory on the other hand. This book is intended for students at universities, but also for engineers in practice and researchers in engineering science. About the author: Univ.-Prof. Dr.-Ing. habil. Christian Mittelstedt, studied civil engineering at the University of Wuppertal, where he graduated as Dipl. -Ing. in 1999. He received his doctoral degree from the University of Siegen in 2005 with a dissertation on stress concentration problems in composite laminates. From 2006 he worked in the German aerospace industry as research engineer and from 2011 as a technical leader and expert in the field of structural analysis. He defended his habilitation thesis on the stability of thin-walled composite panels in lightweight construction in 2012 and is author and co-author of more than 200 scientific papers published in international journals, conference proceedings, but also officially recognized structural analysis manuals. Since August 2016, he has been head of the institute of "Lightweight Construction and Design" at the Department of Mechanical Engineering at Darmstadt University of Technology.