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| | Autore | Müller Wolfgang H |
| | Titolo | An Expedition to Continuum Theory / / by Wolfgang H. Müller |
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| | Edizione | [1st ed. 2014.] |
| | Descrizione fisica | 1 online resource (408 p.) |
| | Collana | Solid Mechanics and Its Applications, , 0925-0042 ; ; 210 |
| | Disciplina | 531 |
| | Soggetti | Mechanics<br>Mechanics, Applied<br>Continuum physics<br>Materials science<br>Theoretical and Applied Mechanics<br>Classical and Continuum Physics<br>Materials Science, general |
| | 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 at the end of each chapters and index. |
| | Nota di contenuto | 1 Prologue -- 2 Coordinate transformations -- 3 Balances (in particular in Cartesian systems -- 4 Spatial derivatives of fields -- 5 Balance equations in skew curvilinear coordinate systems -- 6 Constitutive equations in arbitrary coordinate systems -- 7 A first glance on field equations -- 8 Observers and frames of reference in classical continuum theory -- 9 Problems of linear elasticity -- 10 Selected problems for Newtonian and Maxwellian fluids -- 11 Introduction to time-independent plasticity theory -- 12 Entropy -- 13 Fundamentals of electromagnetic field theory -- Picture sources -- Subject index. |
| | Sommario/riassunto | This book introduces field theory as required in solid and fluid mechanics as well as in electromagnetism. It also presents the necessary mathematical framework, namely tensor algebra and tensor calculus, by using an inductive approach, which makes it particularly suitable for beginners. In general, the book can be used in undergraduate classes on continuum theory and, more specifically, in courses on continuum mechanics, for students of physics and engineering alike. The benefits for the readers consist of providing a |

sound basis of the subject as a whole and of training their ability for solving specific problems in a rational manner. For this purpose the general laws of nature in terms of the balances for mass, momentum, and energy are applied and combined with constitutive relations, which are material specific. Various examples and homework problems illustrate how to use the theory in daily practice. Numerous mini-biographies have been added to the mathematical text for diversion and amusement.