Record Nr. UNINA9911022452503321 Autore Cannas da Silva Ana Titolo Tensors for Scientists: A Mathematical Introduction // by Ana Cannas da Silva, Özlem Imamolu, Alessandra lozzi Cham:,: Springer Nature Switzerland:,: Imprint: Birkhäuser,, 2025 Pubbl/distr/stampa 3-031-94136-5 **ISBN** Edizione [1st ed. 2025.] Descrizione fisica 1 online resource (248 pages) Collana Compact Textbooks in Mathematics, , 2296-455X ImamoluÖzlem Altri autori (Persone) IozziAlessandra Disciplina 512.5 Algebras, Linear Soggetti Mathematical physics Mathematics Linear Algebra Mathematical Physics Applications of Mathematics Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia - 1. Introduction -- 2. Review of Linear Algebra -- 3. Multilinear Forms Nota di contenuto -- 4. Inner Products -- 5. Tensors -- 6. Some Physical Tensors -- 7. Solutions to Exercises. This textbook provides a compact introduction to tensors, which are Sommario/riassunto physical or geometric entities that generalize vectors. Tensors are fundamental in engineering and physics, as they form the framework for formulating and solving problems across various disciplines. These include mechanics (inertia tensor, stress tensor, elasticity tensor), electrodynamics (electrical conductivity and resistivity tensors, electromagnetic tensor, magnetic susceptibility tensor), and general relativity (stress-energy tensor, curvature tensor). As such, tensors are integral to most engineering and physics curricula. The material is presented with a rigorous mathematical foundation while emphasizing practical applications. The numerous exercises, accompanied by detailed solutions, further enhance the book's pedagogical purpose and

facilitate self-learning. The book can be used for undergraduate and graduate courses in material science, engineering, and physics,

providing a versatile resource for both teaching and studying.