Tensor algebra and tensor analysis for engineers: with applications to continuum mechanics

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Abstrak

This is the fifth and revised edition of a well-received textbook that aims at bridging the gap between the engineering course of tensor algebra on the one hand and the mathematical course of classical linear algebra on the other hand. In accordance with the contemporary way of scientific publication, a modern absolute tensor notation is preferred throughout. The book provides a comprehensible exposition of the fundamental mathematical concepts of tensor calculus and enriches the presented material with many illustrative examples. As such, this new edition also discusses such modern topics of solid mechanics as electro- and magnetoelasticity. In addition, the book also includes advanced chapters dealing with recent developments in the theory of isotropic and anisotropic tensor functions and their applications to continuum mechanics. Hence, this textbook addresses graduate students as well as scientists working in this field and in particular dealing with multi-physical problems. In each chapter numerous exercises are included, allowing for self-study and intense practice. Solutions to the exercises are also provided.