

1. Record Nr.	UNINA9910254062003321
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Titolo	Algebraic and computational aspects of real tensor ranks [[electronic resource] /] / by Toshio Sakata, Toshio Sumi, Mitsuhiro Miyazaki
Pubbl/distr/stampa	Tokyo : , : Springer Japan : , : Imprint : Springer, , 2016
ISBN	4-431-55459-9
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (112 p.)
Collana	JSS Research Series in Statistics, , 2364-0057
Disciplina	515.63
Soggetti	Statistics Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences Statistics and Computing/Statistics Programs Statistics for Social Sciences, Humanities, Law
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	Basics of Tensor Rank -- 3-Tensors -- Simple Evaluation Methods of Tensor Rank -- Absolutely Nonsingular Tensors and Determinantal Polynomials -- Maximal Ranks -- Typical Ranks -- Global Theory of Tensor Ranks -- $2 \times 2 \times \dots \times 2$ Tensors.
Sommario/riassunto	This book provides comprehensive summaries of theoretical (algebraic) and computational aspects of tensor ranks, maximal ranks, and typical ranks, over the real number field. Although tensor ranks have been often argued in the complex number field, it should be emphasized that this book treats real tensor ranks, which have direct applications in statistics. The book provides several interesting ideas, including determinant polynomials, determinantal ideals, absolutely nonsingular tensors, absolutely full column rank tensors, and their connection to bilinear maps and Hurwitz-Radon numbers. In addition to reviews of methods to determine real tensor ranks in details, global theories such as the Jacobian method are also reviewed in details. The book includes as well an accessible and comprehensive introduction of mathematical backgrounds, with basics of positive polynomials and calculations by using the Groebner basis. Furthermore, this book provides insights into numerical methods of finding tensor ranks through simultaneous singular value decompositions.

