

1. Record Nr.	UNINA9910254083903321
Autore	Deza Michel Marie
Titolo	Encyclopedia of Distances [[electronic resource] /] / by Michel Marie Deza, Elena Deza
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2016
ISBN	3-662-52844-4
Edizione	[4th ed. 2016.]
Descrizione fisica	1 online resource (XXII, 756 p. 2 illus.)
Disciplina	516.36
Soggetti	Differential geometry Topology Computer mathematics Applied mathematics Engineering mathematics Differential Geometry Computational Mathematics and Numerical Analysis Mathematical and Computational Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Part I. Mathematics of Distances: 1 General Definitions -- 2 Topological Spaces -- 3 Generalization of Metric Spaces -- 4 Metric Transforms -- 5 Metrics on Normed Structures -- Part II. Geometry and Distances: 6 Distances in Geometry -- 7 Riemannian and Hermitian Metrics -- 8 Distances on Surfaces and Knots -- 9 Distances on Convex Bodies, Cones and Simplicial Complexes -- Part III. Distances in Classical Mathematics: 10 Distances in Algebra -- 11 Distances on Strings and Permutations -- 12 Distances on Numbers, Polynomials and Matrices -- 13 Distances in Functional Analysis -- 14 Distances in Probability Theory -- Part IV. Distances in Applied Mathematics: 15 Distances in Graph Theory -- 16 Distances in Coding Theory -- 17 Distances and Similarities in Data Analysis -- 18 Distances in Systems and Mathematical Engineering -- Part V. Computer-Related Distances: 19 Distances on Real and Digital Planes -- 20 Voronoi Diagram Distances -- 21 Image and Audio Distances -- 22 Distances in Networks -- Part

VI. Distances in Natural Sciences: 23 Distances in Biology -- 24 Distances in Physics and Chemistry -- 25 Distances in Earth Science and Astronomy -- 26 Distances in Cosmology and Theory of Relativity -- Part VII. Real-World Distances: 27 Length Measures and Scales -- 28 Distances in Applied Social Sciences -- 29 Other Distances.

---

Sommario/riassunto

This 4-th edition of the leading reference volume on distance metrics is characterized by updated and rewritten sections on some items suggested by experts and readers, as well a general streamlining of content and the addition of essential new topics. Though the structure remains unchanged, the new edition also explores recent advances in the use of distances and metrics for e.g. generalized distances, probability theory, graph theory, coding theory, data analysis. New topics in the purely mathematical sections include e.g. the Vitanyi multiset-metric, algebraic point-conic distance, triangular ratio metric, Rossi-Hamming metric, Taneja distance, spectral semimetric between graphs, channel metrization, and Maryland bridge distance. The multidisciplinary sections have also been supplemented with new topics, including: dynamic time wrapping distance, memory distance, allometry, atmospheric depth, elliptic orbit distance, VLBI distance measurements, the astronomical system of units, and walkability distance. Leaving aside the practical questions that arise during the selection of a 'good' distance function, this work focuses on providing the research community with an invaluable comprehensive listing of the main available distances. As well as providing standalone introductions and definitions, the encyclopedia facilitates swift cross-referencing with easily navigable bold-faced textual links to core entries. In addition to distances themselves, the authors have collated numerous fascinating curiosities in their Who's Who of metrics, including distance-related notions and paradigms that enable applied mathematicians in other sectors to deploy research tools that non-specialists justly view as arcane. In expanding access to these techniques, and in many cases enriching the context of distances themselves, this peerless volume is certain to stimulate fresh research.

---