

1. Record Nr.	UNINA9910788824003321
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Titolo	Convex analysis and optimization in Hadamard spaces // Miroslav Bacak
Pubbl/distr/stampa	Berlin, [Germany] ; ; Boston, [Massachusetts] : , : Walter de Gruyter GmbH, , 2014 ©2014
ISBN	3-11-036162-0 3-11-039108-2
Descrizione fisica	1 online resource (194 p.)
Collana	De Gruyter Series in Nonlinear Analysis and Applications, , 0941-813x ; ; Volume 22
Classificazione	SK 870
Disciplina	511/.6
Soggetti	Metric spaces G-spaces Hadamard matrices
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	Front matter -- Preface -- Contents -- 1 Geometry of Nonpositive Curvature -- 2 Convex sets and convex functions -- 3 Weak convergence in Hadamard spaces -- 4 Nonexpansive mappings -- 5 Gradient flow of a convex functional -- 6 Convex optimization algorithms -- 7 Probabilistic tools in Hadamard spaces -- 8 Tree space and its applications -- References -- Index -- Back matter
Sommario/riassunto	In the past two decades, convex analysis and optimization have been developed in Hadamard spaces. This book represents a first attempt to give a systematic account on the subject. Hadamard spaces are complete geodesic spaces of nonpositive curvature. They include Hilbert spaces, Hadamard manifolds, Euclidean buildings and many other important spaces. While the role of Hadamard spaces in geometry and geometric group theory has been studied for a long time, first analytical results appeared as late as in the 1990's. Remarkably, it turns out that Hadamard spaces are appropriate for the theory of convex sets and convex functions outside of linear spaces. Since convexity underpins a large number of results in the geometry of Hadamard spaces, we believe that its systematic study is of substantial interest.

Optimization methods then address various computational issues and provide us with approximation algorithms which may be useful in sciences and engineering. We present a detailed description of such an application to computational phylogenetics. The book is primarily aimed at both graduate students and researchers in analysis and optimization, but it is accessible to advanced undergraduate students as well.
