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| 1. Record Nr. | UNINA9910827005003321 |
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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.
