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| | Nota di contenuto | Preface; Contents; Chapter 1 Preliminary Results; 1.1 Graphs; 1.1.1 Topological and framed graphs their equivalence; 1.1.2 Operations on graphs; 1.1.3 Boundary of graph local graph; 1.1.4 Smooth structure on topological graph; 1.2 Parametric networks; 1.2.1 Main definitions; 1.2.2 Classes of networks' smoothness; 1.3 Network-traces; 1.3.1 Networks-traces and their canonical representatives; 1.4 Stating of variational problem; 1.4.1 Construction of edge functionals; 1.4.2 Construction of edge functionals for networks with fixed topology; Chapter 2 Networks Extremality Criteria |
| | | 2.1 Local structure of extreme parametric networks2.2 Local structure of extreme networks-traces; 2.2.1 Smooth Lagrangians; 2.2.2 Quasiregular Lagrangians; Chapter 3 Linear Networks in RN; 3.1 Mutually parallel linear networks with a given boundary; 3.2 Geometry of planar linear trees; 3.2.1 Twisting number of planar linear tree; 3.2.2 Main theorem; 3.3 On the proof of Theorem 3.2; 3.3.1 Planar polygonal lines I: the case of general position; 3.3.2 Planar polygonal lines II: the general case; 3.3.3 Twisting number of a planar linear tree; 3.3.4 Proof of Theorem 3.2 |
| | | Chapter 4 Extremals of Length Type Functionals: The Case of |

Parametric Networks4.1 Parametric networks extreme with respect to Riemannian length functional; 4.2 Local structure of weighted extreme parametric networks; 4.3 Polyhedron of extreme weighted networks in space having some given type and boundary; 4.3.1 Structure of the set of extreme weighted networks; 4.3.2 Immersed extreme weighted Steiner networks in the plane; 4.4 Global structure of planar extreme weighted trees; 4.5 Geometry of planar embedded extreme weighted binary trees

4.5.1 Twisting number of embedded planar weighted binary treesChapter 5 Extremals of the Length Functional: The Case of Networks-Traces; 5.1 Minimal networks on Euclidean plane; 5.1.1 Correspondence between planar binary trees and diagonal triangulations; 5.1.2 Structural elements of diagonal triangulations; 5.1.3 Tiling realization of binary trees whose twisting number is at most five; 5.1.4 Tilings and their properties; 5.1.5 Structural elements of skeletons from WP5; 5.1.6 Operations of reduction and antireduction; 5.1.7 Profiles and their properties

5.1.8 Classification Theorem for skeletons from WP55.1.9 Location of the growths of tilings from WP5 on their skeletons; 5.1.10 Theorem of realization; 5.1.11 Minimal binary trees with regular boundary; 5.1.12 Growths and linear parts of minimal networks with convex boundaries; 5.1.13 Quasiregular polygons which cannot be spanned by minimal binary trees; 5.1.14 Non-degenerate minimal networks with convex boundary. Cyclical case; 5.2 Closed minimal networks on closed surfaces of constant curvature; 5.2.1 Minimal networks on surfaces of constant positive curvature

5.2.2 Classification of closed minimal networks on flat tori

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| <span style="color:#8B1A2B">Sommario/riassunto</span> | This book deals with the new class of one-dimensional variational problems - the problems with branching solutions. Instead of extreme curves (mappings of a segment to a manifold) we investigate extreme networks, which are mappings of graphs (one-dimensional cell complexes) to a manifold. Various applications of the approach are presented, such as several generalizations of the famous Steiner problem of finding the shortest network spanning given points of the plane. Contents: Preliminary Results; Networks Extremality Criteria; Linear Networks in R N; Extremals of Length Type Functionals: The |