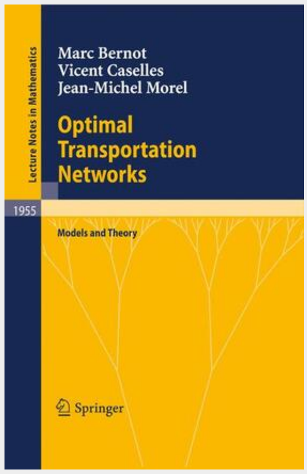
Bernot / Morel / Caselles

Optimal Transportation Networks

Models and Theory

The transportation problem can be formalized as the problem of ?nding + ? the optimal paths to transport a measure ? onto a measure ? with the same mass. In contrast with the Monge-Kantorovich formalization, recent approaches model the branched structure of such supply networks by an energy functional whose essential feature is to favor wide roads. Given a ?ow ? in a tube or a road or a wire, the transportation cost per unit length ? is supposed to be proportional to ? with 0

The transportation problem can be formalized as the problem of finding the optimal way to transport a given measure into another with the same mass. In contrast to the Monge-Kantorovich problem, recent approaches model the branched structure of such supply networks as minima of an energy functional whose essential feature is to favour wide roads. Such a branched structure is observable in ground transportation networks, in draining and irrigation systems, in electrical power supply systems and in natural counterparts such as blood vessels or the branches of trees. These lectures provide mathematical proof of several existence, structure and regularity properties empirically observed in transportation networks. The link with previous discrete physical models of irrigation and erosion models in geomorphology and with discrete telecommunication and transportation models is discussed. It will be mathematically proven that the majority fit in the simple model sketched in this volume.



58,84 €
54,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783540693147
Medium: Buch
ISBN: 978-3-540-69314-7
Verlag: Springer Berlin Heidelberg
Erscheinungstermin: 23.09.2008
Sprache(n): Englisch
Auflage: 2009
Serie: Lecture Notes in Mathematics
Produktform: Kartoniert
Gewicht: 341 g
Seiten: 200
Format (B x H): 155 x 235 mm