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Note generali	"The present volume collects notes from lectures delivered for the CIME course on Modelling and optimisation of flows on networks, held in Cetraro in the summer of 2009."--P. vii.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	A User's Guide to Optimal Transport -- Hyperbolic Conservation Laws: an Illustrated Tutorial -- Derivation of Non-Local Macroscopic Traffic Equations and Consistent Traffic Pressures from Microscopic Car-Following Models -- On the Controversy around Daganzo's Requiem for and Aw-Rascle's Resurrection of Second-Order Traffic Flow Models -- Theoretical vs. Empirical Classification and Prediction of Congested Traffic States -- Self-Organized Network Flows -- Operation Regimes and Slower-is-Faster-Effect in the Control of Traffic Intersections --

Sommario/riassunto

In recent years flows in networks have attracted the interest of many researchers from different areas, e.g. applied mathematicians, engineers, physicists, economists. The main reason for this ubiquity is the wide and diverse range of applications, such as vehicular traffic, supply chains, blood flow, irrigation channels, data networks and others. This book presents an extensive set of notes by world leaders on the main mathematical techniques used to address such problems, together with investigations into specific applications. The main focus is on partial differential equations in networks, but ordinary differential equations and optimal transport are also included. Moreover, the modeling is completed by analysis, numerics, control and optimization of flows in networks. The book will be a valuable resource for every researcher or student interested in the subject.

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