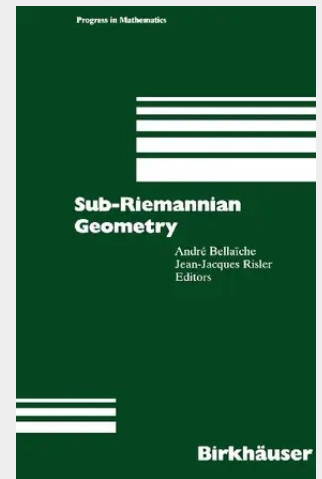


Sub-Riemannian Geometry

Sub-Riemannian geometry (also known as Carnot geometry in France, and non-holonomic Riemannian geometry in Russia) has been a full research domain for fifteen years, with motivations and ramifications in several parts of pure and applied mathematics, namely: • control theory • classical mechanics • Riemannian geometry (of which sub-Riemannian geometry constitutes a natural generalization, and where sub-Riemannian metrics may appear as limit cases) • diffusion on manifolds • analysis of hypoelliptic operators • Cauchy-Riemann (or CR) geometry. Although links between these domains had been foreseen by many authors in the past, it is only in recent years that sub-Riemannian geometry has been recognized as a possible common framework for all these topics. This book provides an introduction to sub-Riemannian geometry and presents the state of the art and open problems in the field. It consists of five coherent and original articles by the leading specialists: • André Bellaïche: The tangent space in sub-Riemannian geometry • Mikhael Gromov: Carnot-Carathéodory spaces seen from within • Richard Montgomery: Survey of singular geodesics • Héctor J. Sussmann: A cornucopia of four-dimensional abnormal sub-Riemannian minimizers • Jean-Michel Coron: Stabilization of controllable systems

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106,99 €
99,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783764354763
Medium: Buch
ISBN: 978-3-7643-5476-3
Verlag: Springer
Erscheinungstermin: 26.09.1996
Sprache(n): Englisch
Auflage: 1996
Serie: Progress in Mathematics
Produktform: Gebunden
Gewicht: 1660 g
Seiten: 398
Format (B x H): 160 x 241 mm

