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Nota di contenuto	- Preface -- Preliminaries -- Exact Solutions -- Causality -- Singularity Theorems -- Cauchy Problems -- Mass in general relativity -- Black Holes -- Appendix: Mathematical Concepts for Physicists -- Bibliography -- Index.
Sommario/riassunto	This concise textbook introduces the reader to advanced mathematical aspects of general relativity, covering topics like Penrose diagrams, causality theory, singularity theorems, the Cauchy problem for the Einstein equations, the positive mass theorem, and the laws of black hole thermodynamics. It emerged from lecture notes originally conceived for a one-semester course in Mathematical Relativity which has been taught at the Instituto Superior Técnico (University of Lisbon, Portugal) since 2010 to Masters and Doctorate students in Mathematics and Physics. Mostly self-contained, and mathematically rigorous, this book can be appealing to graduate students in Mathematics or Physics seeking specialization in general relativity, geometry or partial differential equations. Prerequisites include proficiency in differential

geometry and the basic principles of relativity. Readers who are familiar with special relativity and have taken a course either in Riemannian geometry (for students of Mathematics) or in general relativity (for those in Physics) can benefit from this book.