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Back Again -- Schwarzschild, Droste, and Nordström Solve Einstein's Field Equations -- Ripples, Rotations, and the Kerr Black Hole -- Challenging General Relativity: Black Hole Thermodynamics -- Addressing the Conict Between Quantum Mechanics and General

Relativity.

Sommario/riassunto This book offers a comprehensive exploration into the intertwined

realms of Einstein's theory of general relativity, the discoveries of black holes, and the quantum conundrums that challenge our understanding of the universe. It delves into the fascinating journey from the birth of general relativity to the cutting-edge debates surrounding black holes, wormholes, and quantum physics. The narrative weaves through the historical milestones, including Schwarzschild's 1916 solution, the emergence of black holes in theoretical physics, and the ongoing quest to reconcile general relativity with quantum mechanics. Central to the book is exploring the information paradox and its implications for modern physics, shedding light on the profound questions and

theoretical challenges that have captivated physicists for decades. It also critically examines the ER=EPR conjecture, a pivotal idea proposed by Leonard Susskind and Juan Maldacena, which suggests a deep connection between entangled quantumparticles and the structure of spacetime. In addition, the book engages with contemporary theoretical experiments on wormholes, framed within Nancy Cartwright's philosophical theories, offering a unique perspective on the reliability and interpretation of these groundbreaking scientific concepts. The main topics covered are not only crucial for understanding the universe but also embody the ongoing quest for a unified theory in physics. They represent the cutting edge of scientific inquiry, where the mysteries of black holes, the fabric of spacetime, and the perplexities of quantum mechanics converge. This book is designed for physicists, historians of science, and academically inclined readers interested in the evolution of theoretical physics and the groundbreaking ideas that have shaped our understanding of the cosmos. It offers a detailed yet accessible narrative, making it an invaluable resource for anyone seeking to grasp the complexities and triumphs of modern physics.