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Nota di contenuto	Introduction / Craig Callender and Nick Huggett -- Part 1 -- Theories of quantum gravity and their philosophical dimensions -- Spacetime and the philosophical challenge of quantum gravity / Jeremy Butterfield and Christopher Isham -- Naive quantum gravity / Stephen Weinstein -- Quantum spacetime : What do we know? / Carlo Rovelli -- Part II -- Strings -- Reflections on the fate of spacetime / Edward Witten -- A philosopher looks at string theory / Robert Weingard -- Black holes, dumb holes, and entropy / William G. Unruh -- Part III -Topological quantum field theory -- Higher-dimensional algebra and Planck scale physics / John C. Baez -- Part IV -- Quantum gravity and the interpretation of general relativity -- On general covariance and best matching / Julien B. Barbour -- Pre-Socratic quantum gravity / Gorbon Belot and John Earman -- The origin of the spacetime metric : Bell's 'Lorentzian pedagogy' and its significance in general relativity / Harvey

R. Brown and Oliver Pooley -- Part V -- Quantum gravity and the interpretation of quantum mechanics -- Quantum spacetime without observers : Onto logical clarity and the conceptual foundations of quantum gravity / Sheldon Goldstein and Stefan Teufel -- On gravity's role in quantum state reduction / Roger Penrose -- Why the quantum must yield to gravity / Joy Christian.

Sommario/riassunto

The greatest challenge in fundamental physics is how quantum mechanics and general relativity can be reconciled in a theory of 'quantum gravity'. The project suggests a profound revision of our notions of space, time and matter, and so has become a key topic of debate and collaboration between physicists and philosophers. This volume collects classic and original contributions from leading experts in both fields for a provocative discussion of all the issues. This volume contains accessible introductions to the main and less well known approaches to quantum gravity. It includes exciting topics such as the fate of spacetime in various theories, the so-called 'problem of time' in canonical quantum gravity, black hole thermodynamics, and the relationship between the interpretation of quantum theory and quantum gravity. This book will be essential reading for anyone interested in the profound implications of trying to marry the two most important theories in physics.
