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Soggetti	Elementary particles (Physics) Quantum field theory Astrophysics Mathematical physics Cosmology Gravitation Elementary Particles, Quantum Field Theory Theoretical, Mathematical and Computational Physics Classical and Quantum Gravity
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Nota di contenuto	Introduction -- Prologue: Gravitational Waves in Classical General Relativity -- Field Theory of Linearised Gravity -- Gravitational Wave Radiation from Compact Binaries -- Gravitational Memory and Soft-Graviton Theorem -- Backreaction and Dissipation - the In-In Formalism -- Gravitational Waves from Black-Hole Quasi-Normal Mode Oscillations -- Gravitational Radiation from Spin Dynamics in Binary Orbits -- Refractive Index and Damping of Gravitational Waves in a Medium -- Stochastic Gravitational Waves -- Inflation.
Sommario/riassunto	This book treats the subject of gravitational waves (GWs) production in binary stars or black-holes and in the early universe, using tools of quantum field theory which are familiar to graduate students and researchers in particle physics. A special focus is given to the generation of templates of gravitational wave signals from Feynman

diagram calculations of transition amplitudes, which interests active researchers in GWs. The book presents field theory concepts, like supersymmetry realized in spinning binaries and soft-graviton theorems, that can have practical applications in novel GW signals, like the memory effect. The book also aims at specialists in both GWs and particle physics addressing cosmological models of phase transition and inflation that can be tested in observations at terrestrial and space based interferometers, pulsar timing arrays, and the cosmic microwave anisotropy observations.