



# Superradiance [ Energy Extraction, Black-Hole Bombs and Implications for Astrophysics and Particle Physics /

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Physics Quantum theory Physics Classical and Quantum Gravitation, Relativity Theory Cosmology Elementary Particles, Quantum Field Theory

Monografía

This volume gives a unified picture of the multifaceted subject of superradiance, with a focus on recent developments in the field, ranging from fundamental physics to astrophysics. Superradiance is a radiation enhancement process that involves dissipative systems. With a 60 year-old history, superradiance has played a prominent role in optics, quantum mechanics and especially in relativity and astrophysics. In Einstein's General Relativity, black-hole superradiance is permitted by dissipation at the event horizon, which allows energy extraction from the vacuum, even at the classical level. When confined, this amplified radiation can give rise to strong instabilities known as "blackhole bombs", which have applications in searches for dark matter, in physics beyond the Standard Model and in analog models of gravity. This book discusses and draws together all these fascinating aspects of superradiance

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