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**Physics : Classical and Quantum Gravitation, Relativity Theory**

Hossenfelder, Sabine (Ed.), Frankfurt Institute for Advanced Studies (FIAS), Frankfurt am Main, Germany

# Experimental Search for Quantum Gravity

- Showcases the prospects of finding experimental evidence for quantum gravity
- Brings together experimentalists and theorists from all areas of physics - from particle physics to astrophysics, from cosmology to quantum optics
- Introduces all aspects of latest research in experimental quantum gravity in a collection of 17 essays

This book summarizes recent developments in the research area of quantum gravity phenomenology. A series of short and nontechnical essays lays out the prospects of various experimental possibilities and their current status. Finding observational evidence for the quantization of space-time was long thought impossible. In the last decade however, new experimental design and technological advances have changed the research landscape and opened new perspectives on quantum gravity. Formerly dominated by purely theoretical constructions, quantum gravity now has a lively phenomenology to offer. From high precision measurements using macroscopic quantum oscillators to new analysis methods of the cosmic microwave background, no stone is being left unturned in the experimental search for quantum gravity. This book sheds new light on the connection of astroparticle physics with the quantum gravity problem. Gravitational waves and their detection are covered. It illustrates findings from the interconnection between general relativity, black holes and Planck stars. Finally, the return on investment in quantum-gravitation research is illuminated. The book is intended for graduate students and researchers entering the field.

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