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# Progress and Visions in Quantum Theory in View of Gravity

Bridging Foundations of Physics and Mathematics

- Focuses on the critical discussion of the status and prospects of current approaches in quantum mechanics and quantum field theory
- Discusses visions and new ideas in foundational physics
- Contains new experimental perspectives concerning the interplay of gravity and quantum theory

This book focuses on a critical discussion of the status and prospects of current approaches in quantum mechanics and quantum field theory, in particular concerning gravity. It contains a carefully selected cross-section of lectures and discussions at the seventh conference "Progress and Visions in Quantum Theory in View of Gravity" which took place in fall 2018 at the Max Planck Institute for Mathematics in the Sciences in Leipzig. In contrast to usual proceeding volumes, instead of reporting on the most recent technical results, contributors were asked to discuss visions and new ideas in foundational physics, in particular concerning foundations of quantum field theory. A special focus has been put on the question of which physical principles of quantum (field) theory can be considered fundamental in view of gravity. The book is mainly addressed to mathematicians and physicists who are interested in fundamental questions of mathematical physics. It allows the reader to obtain a broad and up-to-date overview of a fascinating active research area.

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