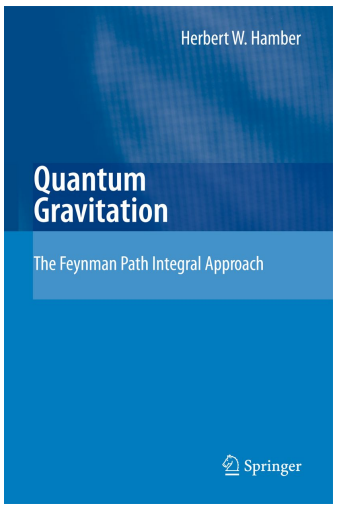

2009. XVIII, 342 p. 60 illus. Hardcover

- **69,95 €**
- **$109.00**
- **SFr. 116.50**
- **£55.99**

ISBN 978-3-540-85292-6

H.W. Hamber, University of California, Irvine, CA, USA

Quantum Gravitation

The Feynman Path Integral Approach

The book covers the theory of Quantum Gravitation from the point of view of Feynman path integrals. These provide a manifestly covariant approach in which fundamental quantum aspects of the theory such as radiative corrections and the renormalization group can be systematically and consistently addressed. The path integral method is suitable for both perturbative as well as non-perturbative studies, and is known to already provide a framework of choice for the theoretical investigation of non-abelian gauge theories, the basis for three of the four known fundamental forces in nature. The book thus provides a coherent outline of the present status of the theory gravity based on Feynman's formulation, with an emphasis on quantitative results. Topics will be organized in such a way that the correspondence to similar methods and results in modern gauge theories will become apparent. Covariant perturbation theory will be developed using the full machinery of Feynman rules, gauge fixing, background methods and ghosts. The renormalization group for gravity and the existence of non-trivial ultraviolet fixed points will be developed, stressing a close correspondence with well understood statistical field theory models. Later the lattice... *more on http://springer.com/978-3-540-85292-6*

► Offers a self-contained, yet comprehensive, introduction to quantum gravitation based on the traditional, well tested covariant approach that forms the basis for a modern treatment of gauge theories ► Stresses the basic physical ideas, developing simple examples and exploiting analogies where suitable ► Avoids so-called loop gravity and spin foam models which break general covariance explicitly and provide no insight on how and why it should be restored