

The book also includes, at the end, a 90-page section of reports on various subjects and book reviews on new publications on foundations of science, logic and mathematics, history of Vienna Circle and other topics. I found this part too interesting to read. The main part will appeal to serious readers. Even with a minimum background knowledge but with a lot of curiosity, I found the book very useful.

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## **The Quantum Theory of Measurement**

**Paul Busch, Pekka J Lahti and  
Peter Mittelstaedt ;**

Second Revised Edition, 1996.

ISBN 3-540-61355-2, Springer-Verlag,  
Heidelberg, pp 181. DM 58.

Appearance of a second edition within five years of first publication of such a technical book, speaks of its success. The counter-intuitive nature of quantum mechanics is well-known. People are still worrying about a correct interpretation of the theory as well, as about the foundations of the

empirically most successful theory of the micro-world available today. The problem of measurement within quantum theory is an important example of the difficulties still remaining unsolved.

The authors of this slim volume have taken, in their own works, a first step towards writing a textbook on the quantum theory of measurement. The interested reader may pursue the subject at greater depth by following the ample bibliography provided.

Starting from a historical account of interpretations of quantum mechanics and its basic features in terms of its Hilbert Space representation and Probability Structure, the authors enter into a discussion of the notion of measurement. They dwell on various technical aspect, such as Pre-measurements, Reading of Pointer Values, Discrete Sharp Observables, Objectification, Measurement Dynamics, etc. They deal at length on the solution of the Objectification problem and on various alternative approaches to the interpretation of quantum mechanics; eg, Copenhagen Interpretation, Ensemble and Hidden Variable Interpretation, Many Worlds and Model Interpretations. The topics of Decoherence and Superselection rules are briefly covered as also the problem of Quantum-Classical Dichotomy.

The authors conclude by observing that *The Quantum theory of measurement is*

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*motivated by the idea of the universal validity of quantum mechanics, according to which the theory should be applicable, in particular, to the measurement process.* They also indicate important issues for future research into the physics underlying quantum measurements.

The level of this monograph is high. For a beginner a first reading of the book may not be enough to clarify all

the points discussed. We are, however, convinced that a patient study will be rewarding to an interested layman and a specialist alike for learning about an interesting branch of modern theoretical physics.

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