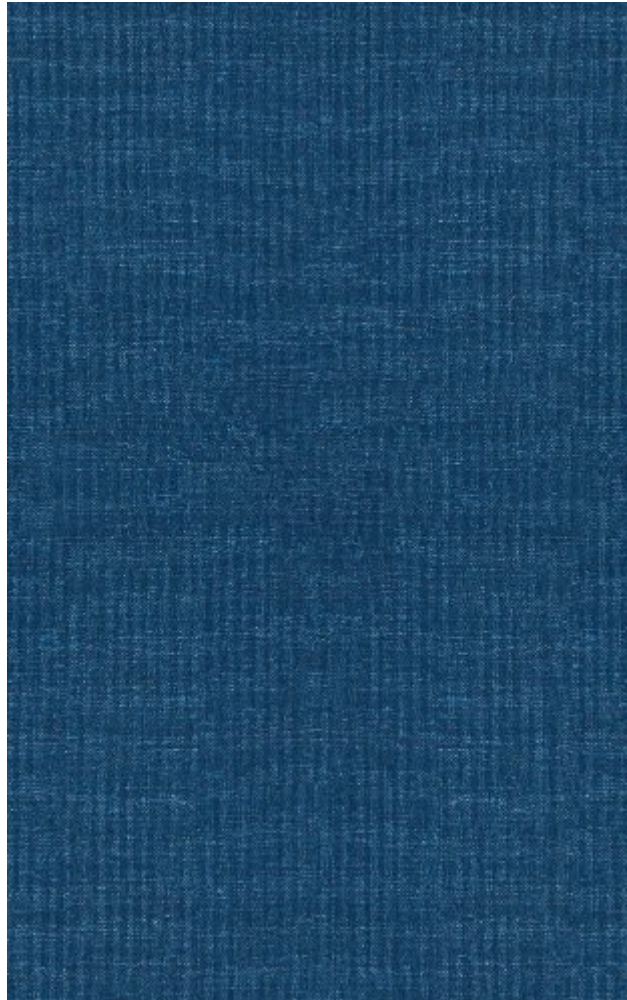


# The Quantum Vacuum: An Introduction to Quantum Electrodynamics PDF



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The Quantum Vacuum: An Introduction to Quantum Electrodynamics by Peter W. Milonni ISBN 0124980805

In modern physics, the classical vacuum of tranquil nothingness has been replaced by a quantum vacuum with fluctuations of measurable consequence. In **The Quantum Vacuum**, Peter Milonni describes the concept of the vacuum in quantum physics with an emphasis on quantum electrodynamics. He elucidates in depth and detail the role of the vacuum electromagnetic field in spontaneous emission, the Lamb shift, van der Waals, and Casimir forces, and a variety of other phenomena, some of which are of technological as well as purely scientific importance.

This informative text also provides an introduction based on fundamental vacuum processes to the ideas of relativistic quantum electrodynamics and quantum field theory, including renormalization and Feynman diagrams. Experimental as well as theoretical aspects of the quantum vacuum are

described, and in most cases details of mathematical derivations are included.

Chapter 1 of **The Quantum Vacuum** - published in advance in *The American Journal of Physics* (1991)-was later selected by readers as one of the Most Memorable papers ever published in the 60-year history of the journal. This chapter provides an excellent beginning of the book, introducing a wealth of information of historical interest, the results of which are carefully woven into subsequent chapters to form a coherent whole.

#### Key Features

- \* Does not assume that the reader has taken advanced graduate courses, making the text accessible to beginning graduate students
- \* Emphasizes the basic physical ideas rather than the formal, mathematical aspects of the subject
- \* Provides a careful and thorough treatment of Casimir and van der Waals forces at a level of detail not found in any other book on this topic
- \* Clearly presents mathematical derivations

## **The Quantum Vacuum: An Introduction to Quantum Electrodynamics Review**

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