



Advances in the Casimir Effect (International Series of Monographs on Physics)

By Michael Bordag, Galina Leonidovna Klimchitskaya, Umar Mohideen, Vladimir Mikhaylovich Mostepanenko

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The subject of this book is the Casimir effect, a manifestation of zero-point oscillations of the quantum vacuum resulting in forces acting between closely spaced bodies. For the benefit of the reader, the book assembles field-theoretical foundations of this phenomenon, applications of the general theory to real materials, and a comprehensive description of all recently performed measurements of the Casimir force with a comparison between experiment and theory. There is an urgent need for a book of this type, given the increase of interest in forces originating from the quantum vacuum. Numerous new results have been obtained in the last few years which are not reflected in previous books on the subject, but which are very promising for fundamental science and nanotechnology. The book is a unique source of information presenting a critical assessment of all the main results and approaches from hundreds of journal papers. It also outlines new ideas which have not yet been universally accepted but which are finding increasing support from experiment.

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Editorial Review

Review

"This is the first modern, comprehensive book on the Casimir effect, a very timely subject of growing importance and general appeal in physics. Although the Casimir effect has been an intriguing subject on its own right for more than half a century, it is experiencing a renaissance at the moment, because only fairly recently first precise measurements of the Casimir force have been made and because the Casimir effect is becoming important in nanotechnology." --Ulf Leonhardt, University of St Andrews

About the Author

Professor Umar Mohideen has held various positions at the University of California, Riverside, USA, and is now Vice-Chair of the Department of Physics and Astronomy there.

Professor Galina Leonidovna Klimchitskaya began her career at the Leningrad State University, and is now Professor of the Department of Physics of the North-West Technical University (St.Petersburg, Russia). She has held visiting Professorships at Leipzig University, Germany; University of Paraiba, Joao Pessoa, Brazil; Central Brazilian Physical Institute, Rio de Janeiro, Brazil; and the University of California, Riverside, USA.

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