

Casimir Effects

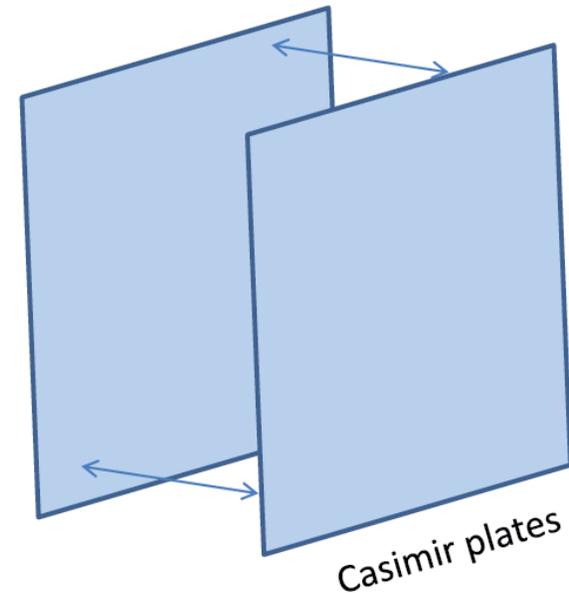


Professor Peter Milonni

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Following a brief review attention will be focused on the most famous Casimir effect---the force between two perfectly conducting plates ---and the extension of the theory to dielectric materials. Other interpretations of this force, including its relation to interatomic van der Waals interactions, will be presented, as well as a brief overview of recent theoretical and experimental work.

Force from quantum fluctuations



3:00 pm, Monday, Oct 11, 2010
Bausch & Lomb 106
2:45 pm Refreshments B&L Lobby.

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Casimir Effects

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Abstract:

Casimir effects are generally regarded as manifestations of zero-point energies of quantum fields. The best-known Casimir effects are those associated with the electromagnetic vacuum field; these are of great current interest not only for basic physics but also for their implications for nanotechnology. Following a brief review of the concept of zero-point energy, and experimental evidence for it, attention will be focused on the most famous Casimir effect---the force between two perfectly conducting plates---and the extension of the theory to dielectric materials. Other interpretations of this force, including its relation to interatomic van der Waals interactions, will be presented, as well as a brief overview of recent theoretical and experimental work.

Biography:

Peter Milonni (Ph.D, Physics, University of Rochester, 1974) is currently a Laboratory Fellow (ret.) and Laboratory Associate of the Los Alamos National Laboratory and a Research Professor of Physics at the University of Rochester. He is the author of several books, including "Laser Physics" (with J. H. Eberly) and "The Quantum Vacuum: An Introduction to Quantum Electrodynamics." He currently serves as a Divisional Associate Editor for Physical Review Letters and on the advisory boards for Progress in Optics, Contemporary Physics, and Advances in Optics and Photonics, and was the 2008 recipient of the Max Born Award from the Optical Society of America.