Casimir effect for a collection of parallel conducting surfaces

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Abstract

© 2015, Pleiades Publishing, Ltd. We consider the Casimir energy for a system of conducting parallel planes with constant surface conductance and obtain a general expression for the Casimir energy of the systems of two, three, and four planes. For equal separations between the planes, the energy is inversely proportional to the cubed distance between the planes and for low conductance is independent of the Planck constant and the speed of light. For a system of ideally conducting planes, the Casimir energy is the sum of the Casimir energies of pairs of adjacent planes.

Keywords

Casimir effect, quantum field theory, vacuum polarization, zeta function