SEMINARIO

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Net van der Waals force on a binary system of identical atoms

Abstract: It was recently shown that a net vdW force acts upon a binary system made of two distinctive atoms, one of which is initially excited –Phys.Rev.A, 062701 (2016). Here we address this problem on a system made of two identical atoms, which resembles that of Dicke's on super/sub-radiance. Following a fully Hamiltonian and time-dependent approach we show that, once the system is released with one of the atoms initially excited, a net force act upon the whole system. This force oscillates in time at the frequency that the excitation is transferred between the atoms by virtual photons, which carry the excess of linear momentum. The strength of the force becomes maximum for interatomic distances of the order of a wavelength

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