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Nonstationary Casimir Effect: Quantum Emission by Oscillating Mirror[1] IMBI TEHVER, VLADIMIR HIZHNYAKOV, HELLE KAASIK, Institute of Physics, University of Tartu, Riia 142, 51014 Tartu, Estonia — Recently many authors have become interested in the nonstationary Casimir effect - quantum emission due to the change of border conditions in time. The case of a cavity has been discussed in detail. We study an oscillating mirror. The oscillations perturb the zero-point state, causing a weak emission, which strongly increases if the maximum velocity approaches c. The spectrum of the emission has a peak at half oscillation frequency, which diverges logarithmically in the cone with the angle Pi/3. Periodical changes of the zero-point state may result from the oscillations of the refractive index of a medium exposed in the laser field [1]. If the maximum velocity of the oscillations of the optical length approaches 2.94 c, then a strong enhancement of the emission takes place [2]. This condition corresponds to the resonance between the oscillations of the optical length and the wavelength of the modes, which emit photons. Modern laser facilities allow one to achieve the enhancement condition. 1. V. Hizhnyakov, Quantum Optics, 4, 277 (1992). 2. V. Hizhnyakov, H. Kaasik. J. Phys. Conf. Series, 21, 155 (2005).

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