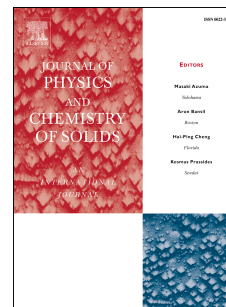


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Study on the optical rectification and second-harmonic generation with position-dependent mass in a quantum well

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Abstract: In this paper, the energy levels and the wave functions of the schrödinger equation with position-dependent mass (PDM) are theoretically deduced, and they are brought into the nonlinear optical rectification (OR) and the second harmonic generation (SHG). We find that the peaks of coefficient curves of optical rectification and second harmonic generation become larger and occur blue shift under the condition of variable mass. Moreover, with the increment of mass variable k , the energy interval E_{ij} decreases, which makes the coefficients suffer a red shift, and the absolute value of the matrix elements product $|M_{ij}M_{jk}M_{ki}|$ presents different monotonicity, that makes the peaks value of coefficients change regularly.

Keywords: optical rectification; second harmonic generation; position-dependent mass

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