

Optical Multi-wave Mixing Process Based on Electromagnetically Induced Transparency

LI Jia-Hua,¹ PENG Ju-Cun,² and CHEN Ai-Xi^{1,3}

¹ Department of Physics, Huazhong University of Science and Technology, Wuhan 430074, China

² Department of Physics, Xiaogan Normal University, Xiaogan 432100, China

³ Wuhan Institute of Physics and Mathematics, the Chinese Academy of Sciences, Wuhan 430071, China

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Abstract: In this paper, we propose and analyze an optical multi-wave mixing scheme for the generation of coherent light in a five-level atomic system in the context of electromagnetically induced transparency. A detailed semiclassical study of the propagation of generated mixing and probe fields is demonstrated. The analytical dependence of the generated mixing field on the probe field and the respective detuning is predicted. Such a nonlinear optical process can be used for generating short-wavelength radiation at low pump intensities.

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Key words: optical multi-wave mixing, electromagnetically induced transparency, Rabi frequency

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