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Double-Cascade Continuous-Wave Four-Wave Mixing Scheme in a Coherent Cold Atomic Medium

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Abstract: We demonstrate the efficient generation of coherent light in a four-level double-cascade atomic medium by continuous-wave low-intensity laser radiation. We derive the corresponding explicit analytical expressions for the generated four-wave mixing (FWM) field. Dependencies of the intensity of the generate FWM field on the propagation distance, on the input-wave intensity, and on the photon detuning are investigated. To conclude, we also give a brief discussion on the experimental realization of the proposed scheme.

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Key words: continuous wave, four-wave mixing, atomic coherence

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