

Abstract Submitted
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Optical frequency comb control of Raman transitions in the presence of decoherence SVETLANA MALINOVSKAYA, Stevens Institute of Technology — Theoretical studies are presented on the optical frequency comb interaction with the three-level λ -system in the presence of decoherence caused by vibrational energy relaxation and collisional dephasing. The exact numerical solutions are obtained without taking into account the rotating wave approximation and adiabatic elimination of transitional states. The resonant and nonresonant Raman scattering is analysed. The interplay of the frequency comb parameters and the properties of the material system is revealed showing the conditions for predetermined population dynamics. The control parameters of the frequency comb include the single pulse duration, the pulse train period, the single-photon detuning and the phase variation across an individual pulse in various forms.

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