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Numerical simulation of QASER in the three-level atomic system LUOJIA WANG, LUQI YUAN, MARLAN SCULLY, Texas A&M Univ — Recently proposed QASER (quantum amplification by superradiant emission of radiation) generates light at higher frequencies than the pumping frequency ν_d and operates at the difference combination resonance $\nu_d = \omega_2 - \omega_1$, which holds promise for a new kind of high-frequency radiation sources. Here we numerically simulate the QASER experiment with a near-resonance pumping pulse in a three-level atomic system as the model of Rb gas. We found the backward emissions of both transitions could have QASER-like gain. We considered possible effects of backward propagating fields to compare with the experimental data. This simulation would provide explanations for QASER experiments.

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