

Abstract Submitted
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Control of multiphoton transitions without pulse shaping¹ AN-DRAS CSEHI, University of Debrecen — We propose a scheme to induce total population inversion between two indirectly coupled states of an atom. In contrast to well-known pulse shaping techniques, where the temporal intensity or phase of the laser field is modulated to maximize the population transfer, here we use a single unshaped Gaussian laser pulse of constant frequency to completely invert the population between the ground state and an excited state of the system, for which a direct transition is forbidden. In our numerical study, multiphoton transitions of atomic sodium are considered in the presence of dynamic Stark-shifts (DSS) and a detailed analysis is given about the pulse duration and detuning dependence of the efficient population inversion between the 3s and 4s states.

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