Non-intuitive Coherent Population Transfer

H. MAEDA, J.H. GURIAN, D.V.L. NORUM, T.F. GALLAGHER, University of Virginia — Coherent population transfer using a sequence of adiabatic rapid passages through single photon resonances is intuitive, i.e. the frequencies of the atomic transitions follow that of the chirped radiation field. Here we report efficient non-intuitive population transfer, which can occur even when the frequency is chirped in the wrong direction. The sequence of single photon transitions is replaced by a single multiphoton transition, enormously reducing the range of chirp required.

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