

Speeding up the spatial adiabatic passage of matter waves in optical microtraps by optimal control

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<http://arxiv.org/abs/1112.3828v1> [2]

We numerically investigate the performance of atomic transport in optical microtraps via the so called spatial adiabatic passage technique. Our analysis is carried out by means of optimal control methods, which enable us to determine suitable transport control pulses. We investigate the ultimate limits of the optimal control in speeding up the transport process in a triple well configuration for both a single atomic wave packet and a Bose-Einstein condensate within a regime of experimental parameters achievable with current optical technology.

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