

Manipulating the external states of a condensate for rapid loading

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We analyze the effect of sequences of standing wave pulses on a Bose-Einstein condensate (BEC). Experimental observations are in good agreement with a numerical simulation based on the band structure theory in the optical lattice. We also demonstrate that a coherent control method based on such sequences of pulses is very efficient for experimentally designing specific momentum states. With this method, we manage to load a condensate into an optical lattice with little heating.

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