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Momentum Spectroscopy of Cold Rubidium in the Femtosecond Laser Field

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We study photoionization of cold rubidium atoms in a strong infrared femtosecond laser field using a magneto-optical trap (MOT) recoil ion momentum spectrometer. The momentum distributions of Rb^+ created by absorption of two- or three-photon illuminate a dipole-like double-peak structure. The yielding momentum resolution of 0.12 ± 0.03 a.u. is achieved in comparison with calculations, exhibiting the great prospects for the study of electron correlations in alkali metal atoms through interaction with strong laser pulses.

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