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Controlled Rapid Adiabatic Passage in a V-Type System YUN-HEUNG SONG, HAN-GYEOL LEE, HANLAE JO, JAEWOOK AHN, Korea Adv Inst of Sci Tech — In chirped rapid adiabatic passage (RAP), chirp sign determines the final state to which the complete population transfer (CPT) occurs in a three-level V-type system. In this study, we show that laser intensity can be alternatively used as a control means in RAP, when the laser pulse is chirped and of a spectral hole resonant to one of the excited states. We verified such excitation selectivity in the experiment performed as-shaped femtosecond laser pulses interacting with the lowest three levels ($5S$, $5P_{1/2}$, and $5P_{3/2}$) of atomic rubidium. The successful demonstration implies that this intensity-dependent RAP in conjunction with laser beam profile programming may allow excitation selectivity for atoms or ions arranged in space.

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