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Rydberg Multipole Transitions in Time-Dependent Ponderomotive Potentials[1] B. KNUFFMAN, G. RAITHEL, University of Michigan — We consider multipole transitions in Rydberg atoms driven by amplitude modulation of an applied standing-wave ponderomotive potential. Using experimentally realizable parameters, we calculate Rabi frequencies of tens of kHz. Dipole selection rules are not applicable to these transitions, which can occur between states whose angular momentum quantum numbers can differ up to about five. Experimental schemes to measure the quantum defects of high angular momentum states using this technique are discussed.

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