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Half-cycle-pulse-train Induced State Redistribution of Rydberg Atoms ANDREW SPECK, PANKAJ MANDAL, Rowland Institute at Harvard — We report on population transfer between low-lying Rydberg states independent of the initial state realized using a train of half-cycle pulses with pulse durations much shorter than the classical orbital period. We demonstrate experimentally the population transfer from initial states around $n = 50$ with 10% of the population de-excited down to $n < 40$ as well as up to the continuum. This is a demonstration of a state-independent de-excitation technique applicable to the currently produced state distribution of antihydrogen. The measured population transfer matches well to a model of the process for one-dimensional atoms.

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