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Optimal Strategies for Fast Control of Collective States of Atoms in Cavities¹ BEREKET BERHANE, MAHMUT REYHANOGLU, Embry-Riddle Aeronautical University — The ability to control quantum mechanical states is an essential requirement for the development of reliable quantum information processing systems. We propose strategies that use sub-picosecond laser pulses for optimal and fast control of the collective state of trapped neutral atoms in a cavity. We present computer simulation for experimentally feasible parameters and discuss potential applications to quantum computing technologies.

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