PhLAM RESEARCH SEMINAR SERIES

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Circular Rydberg Atoms for Quantum Simulation

by

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Individual neutral atoms in optical tweezers promoted to Rydberg states are one of the most promising platforms for quantum simulation of spin systems. Due to their exceptional lifetime, circular Rydberg atoms additionally offer an unprecedented potential for being trapped for timescale of tenth of ms as compared to ordinary, low angular momentum, Rydberg levels. We will present our experimental developments toward long-timescale quantum simulations with circular Rydberg atoms for studying many body physics of out of equilibrium spin systems, like pre-thermalization and effect of disorder on propagation and localization.