

Abstract Submitted
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Rydberg-dressed interactions for quantum metrology VICTORIA BORISH, OGNJEN MARKOVIC, JACOB HINES, MONIKA SCHLEIER-SMITH, Stanford University — Rydberg dressing provides a versatile way to create strong coherent interactions between ground-state neutral atoms. These local, optically controlled interactions can theoretically be used to create metrologically useful entanglement, such as spin squeezing in one or more independent atomic ensembles within an optical lattice. We present progress in Rydberg dressing on the clock transition of cesium via single-photon excitation to nP states. This will allow us to explore optimal routes to generating long-range entanglement with local interactions, including comparing quantum-critical vs. dynamical approaches.

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