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Yb Rydberg Atom Arrays SAM SASKIN, JACK WILSON, Princeton University, YIJIAN MENG, Vienna Center for Quantum Science and Technology, SHUO MA, ROHIT DILIP, ALEX BURGERS, JEFF THOMPSON, Princeton University — Arrays of laser-cooled neutral atoms in optical tweezers are a promising platform for quantum science, because of their flexibility and the potential for strong interactions via Rydberg states. Recent experiments with alkaline-earth atoms have demonstrated significant advantages in terms of coherence and control. We will present recent results with Yb Rydberg atoms in optical tweezer arrays, including novel spectroscopy of Yb Rydberg states, trapping Yb Rydberg atoms in tweezers using the polarizability of the Yb+ ion core, and progress towards qubit operations using the ^{171}Yb nuclear spin levels.

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