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Generating and probing entangled states for optical atomic clocks[1] BORIS BRAVERMAN, AKIO KAWASAKI, VLADAN VULETIC, Massachusetts Institute of Technology — The precision of quantum measurements is inherently limited by projection noise caused by the measurement process itself. Spin squeezing and more complex forms of entanglement have been proposed as ways of surpassing this limitation. In our system, a high-finesse asymmetric micromirror-based optical cavity can mediate the atom-atom interaction necessary for generating entanglement in an ^{171}Yb optical lattice clock. I will discuss approaches for creating, characterizing, and optimally utilizing these nonclassical states for precision measurement, as well as recent progress toward their realization.

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