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**Pushing the uncertainty of a ytterbium optical lattice clock towards $10^{-17}$ fractional frequency** NATHAN HINKLEY, University of Colorado, Boulder, JEFF A. SHERMAN, KYLE BELOY, NATHANIEL B. PHILLIPS, RICHARD W. FOX, CHRIS W. OATES, ANDREW D. LUDLOW, NIST, Boulder — Ultracold alkaline-earth atoms confined in an optical lattice are well-suited as high-accuracy frequency standards. After a previous evaluation of systematic frequency shifts, our ytterbium optical lattice clock demonstrated $3.4 \times 10^{-16}$ fractional uncertainty. Here we summarize recent efforts which improve this uncertainty and the optical lattice clock overall, including precise characterization of the thermal radiation environment; dynamic blackbody radiation effects; and lattice-induced Stark shifts from the E1 polarizability, hyperpolarizability, and multipolar contributions.

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