Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Optical Lattice Clock with Fermionic Strontium S. BLATT, M.M. BOYD, A.D. LUDLOW, T. ZELEVINSKY, S.M. FOREMAN, T. ZANON, G.K. CAMPBELL, J. YE, JILA, National Institute of Standards and Technology and the University of Colorado, Department of Physics, University of Colorado, Boulder, CO, 80309 — We present recent results from our optical atomic clock based on neutral ^{87}Sr in an optical lattice. By probing the $^1S_0$-$^3P_0$ clock transition with a sub-Hz linewidth diode laser, we recover spectra with quality factors $Q > 2 \times 10^{14}$. The clock frequency was measured as 429 228 004 229 874.0(1.1) Hz, with systematic uncertainty $< 9 \times 10^{-16}$, a level of performance approaching current Cs fountains. Stability is currently limited by the Cs-fountain-calibrated hydrogen maser used as the frequency standard. The measured frequency agrees well with our previous data as well as recent measurements by the Paris and Tokyo groups. Work toward direct comparison of optical frequency standards is in progress.

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Date submitted: 03 Feb 2007 Electronic form version 1.4