

Abstract Submitted
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Testing fundamental constants with trapped indium ions

WILLIAM TRIMBLE, WARREN NAGOURNEY, University of Washington — The $^1S_0 \leftrightarrow ^3P_0$ transition in the In^+ ion at 237 nm has a natural linewidth of .8 Hz and is a promising candidate for the development of an optical clock. Since this transition is $J=0 \rightarrow J=0$, the states are not perturbed by the quadrupole trapping potential. We report trapping and spectroscopy of single indium ions using a Paul-Straubel trap and a laser system on the $^1S_0 \leftrightarrow ^3P_1$ transition at 230 nm and the development of a frequency quadrupled stabilized Nd:YAG laser to excite the narrow $^1S_0 \leftrightarrow ^3P_0$ transition. We describe prospects for measuring the time-variation of the electromagnetic coupling constant by comparing the frequency of an oscillator locked to the In^+ transition to those of other optical clocks.

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