

Abstract Submitted
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Optical Atomic Clock for Fundamental Physics and Precision Metrology in Space¹ JASON WILLIAMS, THANH LE, SASCHA KULAS, NAN YU, Jet Propulsion Laboratory, California Institute of Technology — The maturity of optical atomic clocks (OC), which operate at optical frequencies for higher quality-factor as compared to their microwave counterparts, has rapidly progressed to the point where lab-based systems now outperform the record cesium clocks by orders of magnitude in both accuracy and stability. We will present our efforts to develop a strontium optical clock testbed at JPL, aimed towards extending the exceptional performance demonstrated by OCs from state-of-the-art laboratory designs to a transportable instrument that can fit within the space and power constraints of e.g. a single express rack onboard the International Space Station. The overall technology will find applications for future fundamental physics research, both on ground and in space, precision time keeping, and NASA/JPL time and frequency test capabilities.

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