

Abstract Submitted  
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**The Optical Rubidium Atomic Frequency Standard: Toward a Rugged Optical Atomic Clock** BENJAMIN STUHL, Space Dynamics Laboratory, ORCA TEAM<sup>1</sup> — Ruggedized atomic clocks are necessary for a wide array of applications (e.g., satellite-based navigation and communication). Building upon existing vapor-cell and laser technologies, we describe an optical atomic clock, designed around a simple and manufacturable architecture, that utilizes the 778 nm two-photon transition in rubidium and yields fractional-frequency instabilities of  $4 \times 10^{-13}/\sqrt{\tau}$  for  $\tau$  from 1 to 10,000 s. We present a stability budget and demonstrate a system design for achieving a fractional-frequency instability of  $1 \times 10^{-15}$  that can be maintained on long time scales.

<sup>1</sup>the Optical Rubidium Clock Association

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