

Frequency Combs Outside the Metrology Lab: Time Transfer over Long Distance Terrestrial Links

Laura C. Sinclair¹, Emily D. Caldwell^{1,2}, Benjamin K. Stuhl³, William C. Swann¹, Nathan R. Newbury¹, and Jean-Daniel Deschenes⁴

1. National Institute of Standards and Technology; Boulder, Colorado, United States.

2. Department of Electrical, Energy and Computer Engineering, University of Colorado; Boulder, Colorado, United States.

3. Space Dynamics Laboratory; North Logan, Utah, United States.

4. Octosig Consulting; Quebec City, Quebec, Canada.

Author e-mail address: laura.sinclair@nist.gov

Abstract: Future clock networks will require femtosecond-level time distribution for applications from fundamental physics tests to distributed coherent sensing. We present a quantum-limited comb-based free-space time transfer approach and results on clock synchronization over ultra-long distances. © Work of the US Government, not subject to copyright