

Abstract Submitted  
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**Enhanced Sensitivity of Rydberg Atom-Based Radio Frequency Field Measurements Using Heterodyne Detection** JOSHUA GORDON, National Institute of Standards and Technology Boulder, MATTHEW SIMONS, University of Colorado / NIST Boulder, ABDULAZIZ HADDAB, University of Colorado, CHRISTOPHER HOLLOWAY, National Institute of Standards and Technology Boulder — Atom-based radio frequency (RF) field measurements have advantages over current methods in frequency range and SI-traceability. However, the sensitivity is currently limited by the linewidth of electromagnetically-induced transparency (EIT) for absolute measurements, or by the resolution of a change in EIT amplitude for relative measurements. We demonstrate that an RF heterodyne technique can extend the sensitivity beyond current techniques. A second applied RF field acts as a local oscillator (LO), such that the effect of an applied weak RF field is enhanced by the strong LO field.

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