

Abstract Submitted  
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**Probing RF electric fields with Rydberg atoms<sup>1</sup>** ARNE SCHWETTMANN, JONATHON SEDLACEK, CALE GENTRY, JAMES SHAFER, The University of Oklahoma — Using an atom chip setup, we investigate the use of high-lying Rb Rydberg atoms ( $n>30$ ) as sensitive electric field sensors. Rydberg atoms are sensitive to electric fields due to their large polarizability and the large transition dipole moments between nearby Rydberg states. We excite ultracold Rydberg atoms in a magnetic wire-trap. The magnetic trap is loaded from a mirror magneto-optical trap. We then probe the interaction of Rydberg atoms with small RF electric fields using an EIT scheme. The presence of very small external RF fields modifies the EIT line shape significantly, because the RF field couples strongly to the transitions between Rydberg levels. In future experiments, it will be possible to miniaturize this setup for use as a sensor, by using room temperature atoms in microcells.

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Arne Schwettmann  
The University of Oklahoma

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