

Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Measurement of the Landé g factor of the $5D_{5/2}$ state of Ba II with a single trapped ion¹ NATHAN KURZ, MATTHEW DIETRICH, GANG SHU, THOMAS NOEL, BORIS BLINOV, University of Washington — We present a terrestrial measurement of the Landé g factor of the $5D_{5/2}$ state of singly ionized barium. Measurements were performed on single Doppler-cooled $^{138}\text{Ba}^+$ ions in a linear Paul trap. A frequency-stabilized fiber laser with a nominal wavelength of $1.762\ \mu\text{m}$ was scanned across the $6S_{1/2} \leftrightarrow 5D_{5/2}$ transition to spectroscopically resolve transitions between Zeeman sublevels of the ground and excited states. From the relative positions of the four narrow transitions observed at several different values for the applied magnetic field, we find a value of 1.2020 ± 0.0005 for $g(5D_{5/2})$, a considerable improvement over the previously quoted value.

¹National Science Foundation Grants Nos. 0758025 and 0904004

Nathan Kurz
University of Washington

Date submitted: 04 Feb 2011

Electronic form version 1.4