

Abstract Submitted  
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**Precision Measurements of the  $J=0$  to  $J=2$  Fine-Structure Interval in the Triplet 2P State of Helium-4**<sup>1</sup> MARC SMICIKLAS, DAVID SHINER, University of North Texas — Our research involves measuring to high precision the fine-structure intervals in He-4 using an atomic beam apparatus and a 1083nm excitation laser with tunable sidebands. Along with a complete redesigned apparatus, many recent improvements have been implemented into our experimental setup. These include optical pumping for state preparation, electric field quenching of the singlet state, an improved metastable source for much larger signals, and an improved detector for low background. We now use different initial and final metastable states for interaction and detection over our previous technique. These changes have allowed us to greatly improve on our systematic and consistency checks, most notably, a consistency check in which we measure the hyperfine splitting in metastable He-3. Discussed will be these recently completed improvements, along with our current results.

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