Abstract Submitted
for the DAMOP05 Meeting of
The American Physical Society

Work on improving a high precision experiment in helium[1] MARC SMICIKLAS, KOUSTUBH DANEKAR, ALI KHADEMIAN, DAVID SHINER, University of North Texas — Current work to improve an experimental setup for high precision laser spectroscopy of helium is presented. Included is ongoing work to construct a UHV apparatus for improved signal to noise, among other benefits. Also presented are efforts to design and implement a high brightness electron source using a lanthanum hexaboride cathode. This will provide the electron emission for initial state preparation of the helium atoms. Efforts to design and construct a cost effective laser source suitable for high precision spectroscopy and laser pumping applications are presented. Results with our custom designed Bragg gratings and ytterbium doped fiber in a Distributed Bragg Reflector configuration are discussed.

[1]Funded in part by an NSF grant.

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Date submitted: 28 Jan 2005 Electronic form version 1.4