Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Precise and Stable Frequency Source, and Measurement of $^{130}Te_2$ Reference Lines from 443 to 451 nm JAMES COKER, DAVID LA MANTIA, JEFFREY GILLEAN, JOHN FURNEAUX, University of Oklahoma — A precise, repeatable and stable optical frequency source is required for many modern spectroscopy experiments. Frequency combs have proven invaluable to many, but are not obtainable for others due to their high cost. Using a GPS disciplined oscillator, a stabilized Fabry-Pèrot cavity, a relatively low-cost wavemeter and standard RF equipment, we have achieved a reliable laser system with a 10^{-9} or better frequency uncertainty at a fraction of the cost. With this system we have measured approximately 3000 transitions in $^{130}Te_2$ continuously between 664 and 676 THz to $\sim$ 0.0001 cm^{-1} precision. The system is described in detail, and the possibility of improving our knowledge of the excited states of $^{130}Te_2$ is considered.

James Coker
University of Oklahoma

Date submitted: 31 Jan 2014 Electronic form version 1.4