

Abstract Submitted  
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**Precision Spectroscopy of Tellurium** JAMES COKER, JOHN FURNEAUX, University of Oklahoma, DEPT. OF PHYSICS AND ASTRONOMY TEAM — Tellurium ( $\text{Te}_2$ ) is widely used as a frequency reference, and although a standard atlas encompassing over  $5200\text{ cm}^{-1}$  already exists [1], Doppler broadening present in that work buries a significant portion of the features. More recent but less complete studies of  $\text{Te}_2$  exist which do not exhibit Doppler broadening [2-4], and this work adds to that knowledge a few hundred transitions in the vicinity of 444 nm. Using a Fabry Perot cavity in a shock-absorbing, temperature and pressure regulated chamber, locked to a Zeeman stabilized HeNe laser, we measure changes in frequency of our diode laser to  $\sim 1$  MHz precision. This diode laser is scanned over 1000 GHz for use in a saturated-absorption spectroscopy cell filled with  $\text{Te}_2$  vapor. This data allows for new studies of the excited states of  $\text{Te}_2$ .

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[2] J. Verges et al., Physica Scripta **25**, 338 (1982).

[3] Ph. Courteille et al., Appl. Phys. B **59**, 187 (1994)

[4] T.J. Scholl et al., J. Opt. Soc. Am. B **22**, 1128 (2005).

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