

Abstract Submitted
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Enhanced Sensitivity in a Superluminal Single Mode DPAL Cavity at Room Temperature TONY ABI-SALLOUM, Department of Physics and Astronomy, Widener University, Chester, PA 19013, USA, JOSHUA YABLON, SHIH TSENG, Department of Physics and Astronomy, Northwestern University, Evanston, IL 60208, USA, SELIM SHAHRIAR, Department of Physics and Astronomy & Department of EECS, Northwestern University, Evanston, IL 60208 — The note beat between two counter-propagating beams in a cavity is used to measure the effective change of the length of the cavity or interferometer for applications such as optical gyroscopes, vibrometers, and gravitational wave detectors. We show in this talk how a superluminal single mode laser cavity can enhance the measured note beat dramatically. We consider the inhomogeneous broadening case and study the dependence of the enhancement factor on few key parameters. We also show how Diode Pump Alkali Lasers (DPAL) are excellent candidates for such devices. Using a Rubidium based DPAL, we study the characteristics of these lasers and their effect on the proposed enhanced sensitivity.

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