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**Experimental setup to demonstrate low-frequency high-precision frequency stabilization of 1550 nm ECL Lasers**  
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University of Texas at Brownsville — Advances in fiber and waveguide technologies have brought about a new type of laser: the Planar Waveguide External Cavity Laser (PW-ECL) that shows a great potential for precision interferometric measurements. We show an experimental setup based on a 1550nm PW-ECL which was designed to achieve a frequency stabilization of  $30 \text{ Hz}/\sqrt{\text{Hz}}$  or less at 10 mHz. The presented design makes use of thermal shielding to suppress temperature fluctuations at low frequencies as well as a vacuum system, high finesse cavity and low-noise electronics to reduce the frequency noise. A description of the components used in the design is given and initial results are presented.

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