

Abstract Submitted
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Hertz level stabilization of a 657nm diode laser BRIAN NEYENHUIS, REBECCA TANG, GREG DOERMANN, DALLIN DURFEE, Department of Physics and Astronomy, Brigham Young University — We will describe a 657nm diode laser locked to a high finesse cavity using the Pound-Drever-Hall method. This laser will be used to drive the calcium clock transition in a next generation atom interferometer. A new high speed lock circuit has been designed to increase the servo bandwidth and allow for straightforward optimization. An optimized scan balance is also included to allow the laser to be scanned over many GHz mode-hop-free. Locked to a cavity with a finesse of 30,000 a linewidth on the kHz level has been achieved. With further optimization, better passive stabilization, and the use of a 300,000 finesse cavity we hope to achieve a linewidth on the Hertz level in the near future.

Donald Griffin
Rollins College

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