

HIGH-SENSITIVITY ANGULAR INTERFEROMETER

Tech ID: 22762 / UC Case 2013-021-0

BRIEF DESCRIPTION

Researchers at the University of California, Berkeley have developed an invention that consists of an angular interferometer able to measure angle variations of a coherent, collimated light source with an accuracy below 30 nrad. The optical setup is compact and consists of a few simple optical components. The novelty of this innovation lies in the use of a simple, cost-effect technique to amplify the sensitivity of the instrument. The disclosed invention is in principle capable of being integrated into more compact, high-sensitivity commercial instruments for a fraction of the cost of current, state-of-the-art instruments (currently exceeding \$30,000).

Commercial devices used to measure the angular deviation of a single beam include autocollimators and interferometers. The highest resolution offered by a commercial system is 25 nrad. The disclosed angular interferometer is able to measure relative angle variations (of a sample beam relative to a reference beam) below 30 nrad, though the resolution is known to currently be limited by the specific details of the current application and can therefore be further reduced with minor, inexpensive improvements.

SUGGESTED USES

Wide variety of applications including precision alignment of optical setups, monitoring the angular variation of a beam over long periods of time and angular calibration of optomechanical components.

ADVANTAGES

Optical instrument able to measure angle variations of a laser beam in the urad to nrad range.

More compact and more sensitive than commercial instruments at a fraction of the cost.

RELATED MATERIALS

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OTHER INFORMATION

CATEGORIZED AS

- » **Optics and Photonics**
 - » All Optics and Photonics
- » **Imaging**
 - » 3D/Immersive
 - » Medical
 - » Molecular
 - » Other
- » **Research Tools**
 - » Bioinformatics
 - » Nucleic Acids/DNA/RNA
- » **Sensors & Instrumentation**
 - » Biosensors
 - » Physical Measurement
 - » Position sensors
 - » Scientific/Research

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [A Drift-Corrected, High-Resolution Optical Trap](#)



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