Laser Beam Stabilization System

Laser-
Laboratorium
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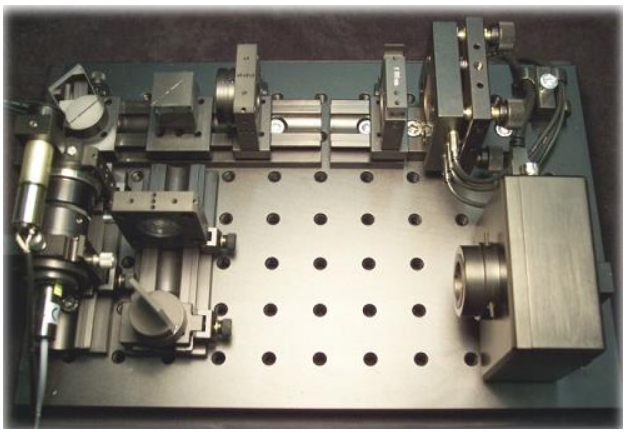
The limited pointing stability of high power laser systems is a question of major concern, since fluctuations of the lateral or angular beam position can cause tremendous problems especially in industrial applications. For compensation of drift effects a Laser Beam Stabilization System was developed, which may be utilized for stabilization and realignment of practically all lasers operating in the UV-VIS-NIR spectral range.



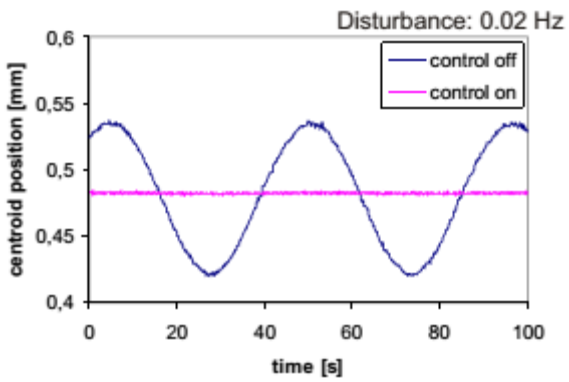
Characteristics:

- **Piezo driven adaptive mirror**
- **Closed-loop tip/tilt correction**
- **Pointing stability: < 1 µrad**

The system makes use of a USB camera which allows monitoring of the far-field of the laser beam to be stabilized at a frame-rate of 400 Hz. For the measurement a small part of the primary beam is coupled into the detection system. The far-field centroid data provide information on the actual beam direction, allowing compensation in x and y-direction by the help of a piezo driven mirror. Automated readjustment after a lateral or angular movement of the beam position is achieved by use of a comprehensive computer program, which allows also determination of the beam pointing stability in accordance with the respective ISO standard 11670.

Specifications

- Accuracy: < 50 mrad
- Max. beam diameter: 40 mm
- Max. divergence : 10 mrad
- Wavelengths from 190 to 1100 nm



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