Contribution ID: **270** Type: **Poster Presentation**

Thermally induced lensing determination from the coefficient of defocus aberration

Wednesday, 9 July 2014 17:10 (1h 50m)

Abstract content
   (Max 300 words)
Formatting &
Special chars

The effects of lensing due to a temperature gradient in a laser crystal as a result of an end-pumped configuration in a solid-state laser resonator were investigated. It is well known that as the result of thermally induced lensing, the effective length of a laser cavity is altered, thus altering the properties of the selected mode at the output of the laser. Typically, the radius of curvature of a lens may be described from the coefficient of the defocus aberration, which can be described from the set of orthogonal Zernike polynomials. The defocus coefficient of known lenses (physical and digital) was measured using a Shack-Hartmann wave-front sensor, as a calibration technique. With this we probe a Nd:YAG gain medium with a collimated Gaussian beam operating at 633 nm and the coefficient of the defocus aberration under active pumping at a variety of pump powers was measured. The position of measurement inside the crystal is varied relative to the end-pumped surface and the resulting focal lengths are compared to typical thermal lens measured data in active end-pumped solid-state lasers.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD)?

PhD

Main supervisor (name and email)
and his / her institution

Prof. A. Forbes
Aforbes1@csir.co.za
NLC-CSIR

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

No

Primary author: Mr BELL, July (UKZN)

Co-authors: Prof. FORBES, Andrew (CSIR); Mr NAIDOO, Darryl (Council for Scientific and Industrial Research)

Presenter: Mr BELL, July (UKZN)

Session Classification: Poster2

Track Classification: Track C - Photonics