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Authors: Sensen Li, Kai Yang, Lei Ding, Luoxian Zhou, Yirui Wang, Yulei Wang, Zhiwei Lu



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# Beam alignment based on the imaging properties of the spatial filter by controlling the deformable mirror in a high power laser

Sensen Li<sup>1,\*</sup>, Kai Yang<sup>1</sup>, Lei Ding<sup>2</sup>, Luoxian Zhou<sup>3</sup>, Yirui Wang<sup>3</sup>, Yulei Wang<sup>3</sup>, Zhiwei Lu<sup>3</sup>

<sup>1</sup> Science and Technology Electro-optical Information Security Control Laboratory, Tianjin 300308, China

<sup>2</sup> Research Center of Laser Fusion, China Academy of Engineering Physics, Mianyang 621900, China

<sup>3</sup> National Key Laboratory of Science and Technology on Tunable Laser, Harbin Institute of Technology, Harbin 150001, China

\* *sensli@163.com*

**Abstract** Deformable mirror placed in the front-end is widely used for wavefront correction in high power solid-state lasers. However, the laser beam is usually partly blocked by the spatial filter pinhole when the deformable mirror surface is improper. In this paper, this beam alignment problem is solved based on the imaging properties of the spatial filter by controlling the defocusing value of the deformable mirror surface. Experimental results show that the spatial filter pinhole is passed through successfully and a relatively complete laser beam nearfield is achieved after beam alignment in the output of the laser system.

*Key words: high power laser; beam alignment; deformable mirror; spatial filter*

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