



# PseudoDiversity - Direct Wavefront Control and Image Restoration at High Bandwidth

## Description

PseudoDiversity is a simplified, high speed adaptive optical system based on wavefront sensing. It simultaneously recovers the wavefront and the object or scene being studied. This approach allows for accurate and precise alignment of segmented and sparse/interferometric optical systems. Images are corrected first by the actuators in the deformable mirrors and then any remaining errors are corrected using an algorithmic approach.

## Features and Benefits

- The approach taken by this software is computationally fast and is designed for accurate and high bandwidth control of an optical system.
- PseudoDiversity does not require defocusing of the system or the addition of other lenses or mirrors.
- This system works in broadband, removing the need for narrowband and photon limiting spectral filters or diffraction gratings.
- Time consuming, computationally intensive iterative algorithms are not used.
- PseudoDiversity sees the same optical path through to the detector of the science instrument, avoiding any non-common path errors.

## Applications

This tool is applicable to control systems and R&D testing for segmented mirror systems and system operation methods.

## For More Information

If you are interested in more information or want to pursue transfer of this technology, GSC-15464-1, please contact:

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To view Goddard's entire portfolio of wavefront sensing technologies, please visit:  
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