



Astronomy

Description

The Goddard Space Flight Center has developed a wealth of wavefront sensing technologies, algorithms, optical components and design, test and simulation tools useful in a wide range of space and earth based telescope applications. These technologies have been utilized on a number of NASA missions and development programs including the James Webb Space Telescope (JWST). Although originally designed for use in space-based adaptive optics applications, these technologies are highly applicable to the challenges of imaging distant celestial bodies through various environmental aberrations and distortions through the use of enhanced wavefront sensing algorithms, components and tools.

Markets & Applications

- Earth Facing Telescopes
- Advanced Amateur Telescopes
- University Telescopes
- Other Large Research Telescopes

GSFC Technologies Available for License

Wavefront Detection Algorithms:

- **GSC-14879-1**, Iterative-Transform Phase-Retrieval Utilizing Adaptive Diversity
- **GSC-14899-1**, Broadband Phase-Retrieval for Image-Based Wavefront Sensing
- **GSC-14900-1**, Filter Function For Wavefront Sensing & Control Over An Extended Field Of View
- **GSC-15208-1**, Direct Solve Image Based Wavefront Sensing
- **GSC-15464-1**, PseudoDiversity - Direct Wavefront Control and Image Restoration at High Bandwidth
- **GSC-15693-1**, Variable Sampling Mapping
- **GSC-15963-1**, Iterative Transform Phase Diversity

System Operating Software:

- **GSC-14725-1**, Wavefront Sensing And Optical Control Software (WSOC)
- **GSC-14982-1**, Alignment Insensitive Active Control-of-Curvature Wavefront Sensing and Control Architecture
- **GSC-15399-1**, James Webb Space Telescope (JWST) Wavefront Sensing Software
- **GSC-15758-1**, Hybrid Architecture Active WFS

Lenses, Gratings & Mirrors:

- **GSC-14901-1**, Fixed Lens Wavefront Sensing
- **GSC-15675-1**, Objective Lens Simultaneously Optimized for Pupil Ghosting
- **GSC-15679-1**, Adaptable Gratings with Wavefront Transformation Functionality
- **GSC-15680-1**, Focusing Diffraction Gratings
- **GSC-16008-1**, Phase Controlled Magnetic Mirror for Wavefront Correction

System Design Simulation & Testing Tools:

- **GSC-15138-1**, Matlab-OSLO Toolkit
- **GSC-15151-1**, Matlab-Zemax Toolkit
- **GSC-15567-1**, Wavefront Control and Optimization Toolbox
- **GSC-15676-1**, Computer Generated Hologram System for Wavefront Measurement System Calibration
- **GSC-15926-1**, Wavefront Sensing Analysis of Grazing Incidence Optical Systems

For More Information

If you are interested in more information or want to pursue transfer of technologies suited to this market, please contact:

Enidia Santiago-Arce
Innovative Partnerships Program Office
NASA Goddard Space Flight Center
enidia.santiago-arce-1@nasa.gov
(301)-286-8497

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

<http://ipp.gsfc.nasa.gov/wavefront>