



Software Suite for Modeling and Simulation of Shaped External Occulters

wavefront sensing portfolio

Description

Written entirely in C, this software suite was originally designed for optically modeling diffraction arbitrarily shaped external occulter for exoplanet coronagraphy and for propagating the fields through an arbitrary telescope. It uses diffraction theory and allows for rigid body misalignments, shape errors and deformations, and wavefront and amplitude errors in the telescope.

Features and Benefits

- This approach exploits the linearity of Maxwell's equations to propagate, with errors, by first propagating the ideal occulter and then the errors separately
- It allows the use small grids that run efficiently on small computers and even laptop computers
- It works both broadband and narrowband and executes on a single processor computer in approximately 2 minutes per wavelength

Applications

- Diffractive Beam Propagation
- Microscopy
- Beam-forming Optics
- Any application where imaging a dark object next to a bright object is required

For More Information

If you are interested in more information or want to pursue transfer of this technology, GSC-16196-1, 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>