

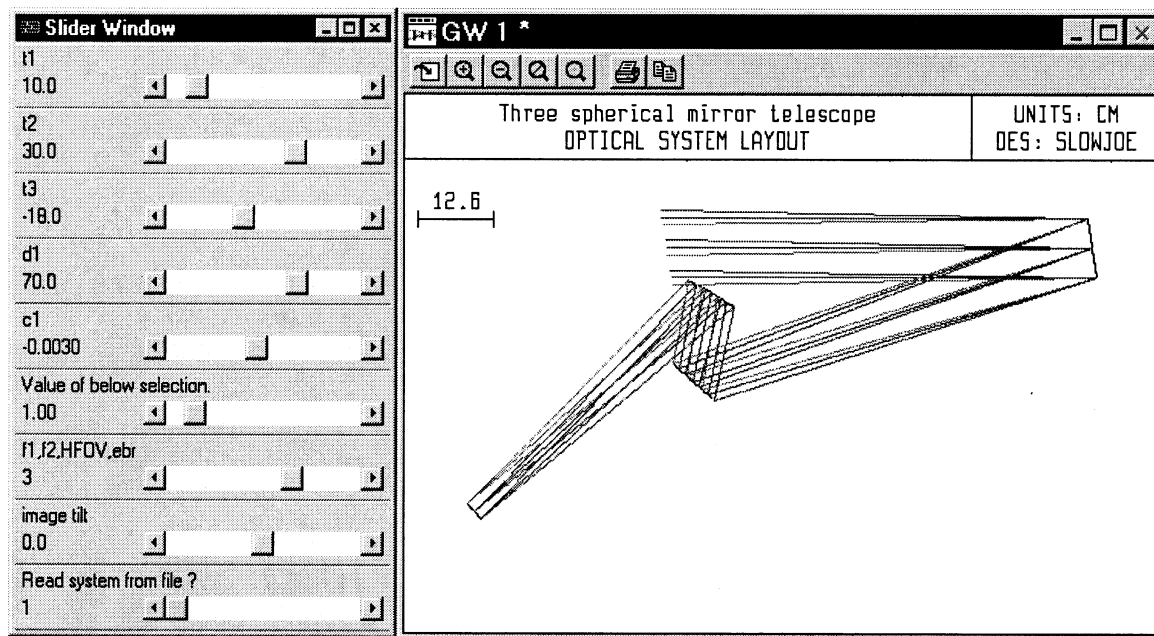
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Title: Optical Design of Telescopes and other Reflective Systems using SLIDERS

Abstract:

Optical design tools are presented to provide automatic generation of reflective optical systems for design studies and educational use. The tools are graphical in nature and use an interactive slider interface with freely available optical design software, OSLO EDU. Operation of the sliders provides input to adjust first-order and other system parameters (e.g. focal length), while appropriate system construction parameters are automatically updated to correct aberrations. Graphical output is also presented in real-time (e.g. a lens drawing) to provide the opportunity for a truly visual approach to optical design. Available systems include two- three- and four-mirror telescopes, relays, and afocal systems, either rotationally symmetric or having just a plane of symmetry. Demonstrations are presented, including a brief discussion of interfacing optical design software to MATLAB, and general research opportunities at NASA.

Figure:



Bio:

Joseph M. Howard completed his Ph.D. in Optics from The Institute of Optics in 1999, and continued his research in optical design of unobstructed reflective optic systems for space applications as a Research Associate for the National Research Council at NASA Goddard Space Flight Center in Greenbelt, MD. Following his post-doc he was hired by NASA, and now serves as the lead optical designer for the James Webb Space Telescope Project, an orbiting cryogenic infrared observatory that will take the place of the Hubble Space Telescope. Joe lives with his wife and two children in Washington DC.