MZA Associates Corporation and Active Optical Systems

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MZA Associates Corporation and Active Optical Systems

- MZA/AOS Capabilities
- MZA/AOS Previous SBIR Experience
- MZA/AOS Future SBIR Opportunities

MZA/AOS Capabilities

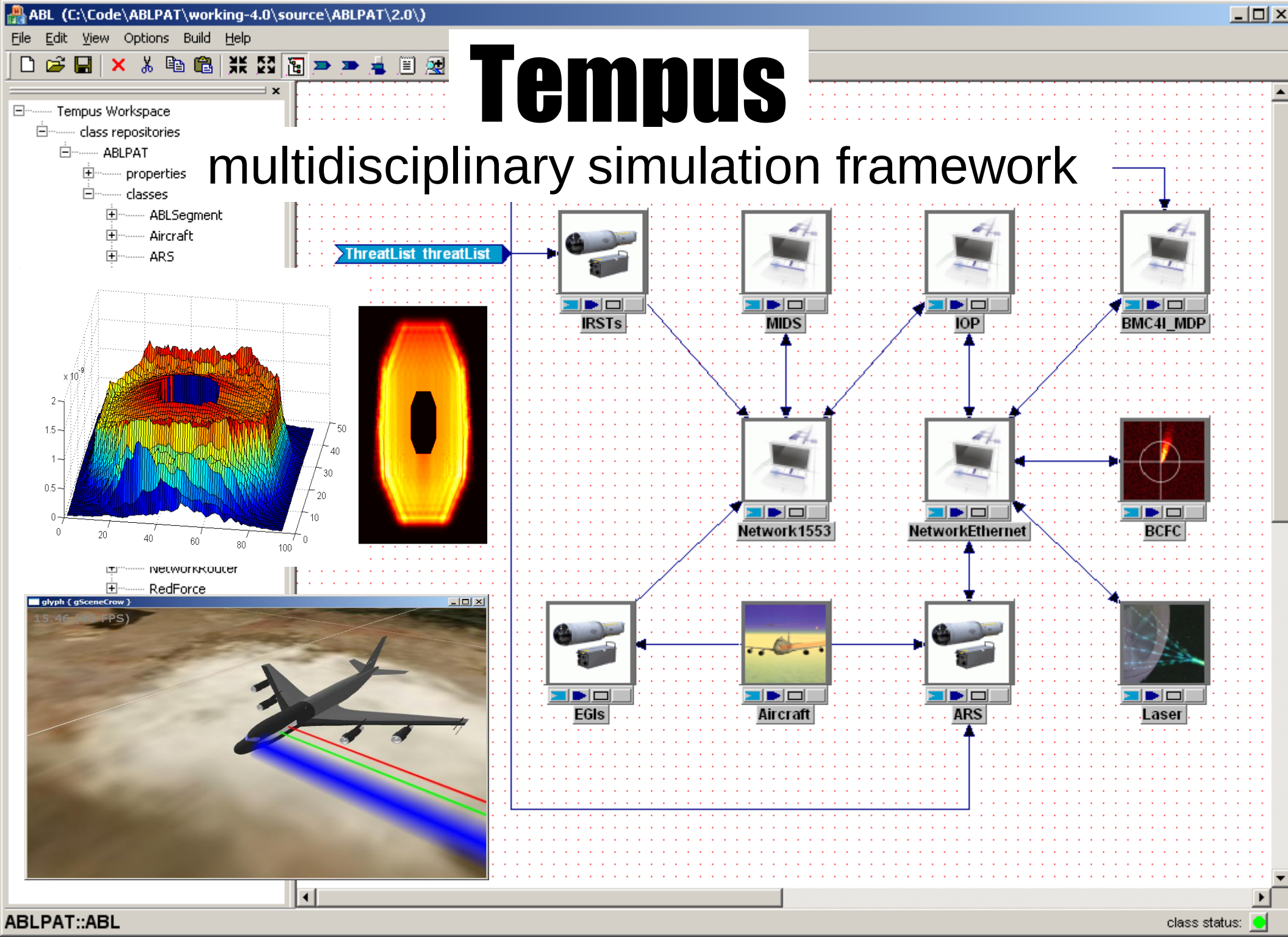
- MZA Associates Corporation
  - Multidisciplinary modeling and simulation
  - Analysis and design of advanced optical systems, especially laser weapons systems
  - Founded in 1991, ~50 employees, most with advanced degrees. Three offices, in Albuquerque, Dayton, Ohio, and Jupiter, Florida.
  - Named an SBIR “success story” for New Mexico
  - Named to the *New Mexico Technology Flying 40* for the last nine consecutive years
- Active Optical Systems (AOS)
  - Active and adaptive optical systems and components
  - A partly owned subsidiary of MZA Associates Corporation.

MZA/AOS Previous SBIR Experience

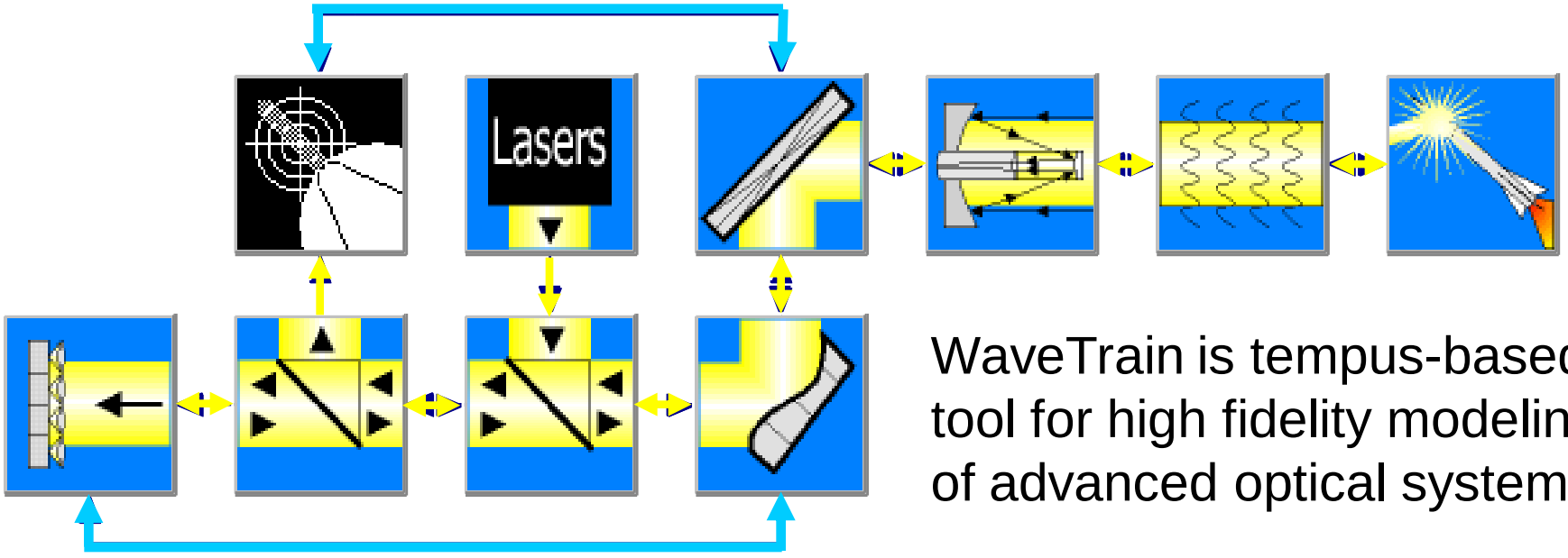
- 17 Phase I SBIRs, 9 Phase II or beyond (so far)
- Our *tempus* and *WaveTrain* simulation tools have been our biggest commercial success to date:
  - $13.3M in Phase III sales to date
  - $760K in Phase III additional investment
  - WaveTrain has become the de facto industry standard, used in almost all laser weapons R&D.
- Other MZA/AOS SBIR technologies we believe have significant commercial potential include
  - AOS adaptive optics components and systems
  - OTHELA, a compact, lightweight, multi-purpose turret for high energy laser weapons systems
- <u>SBIRs have been absolutely critical to MZA's continued growth and success.</u>

Tempus

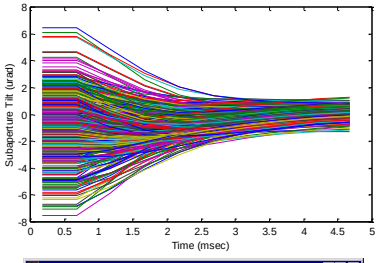
multidisciplinary simulation framework

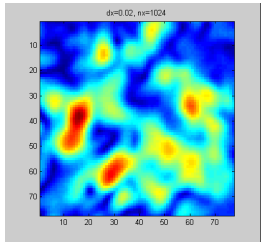


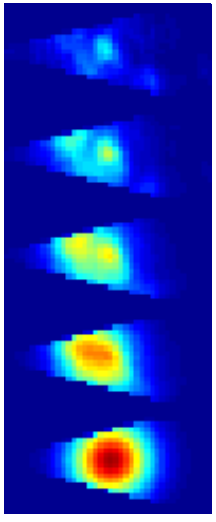
WaveTrain

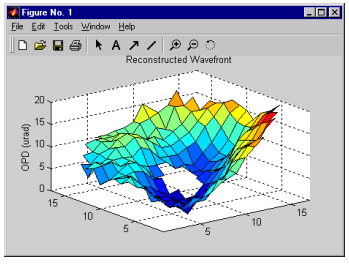


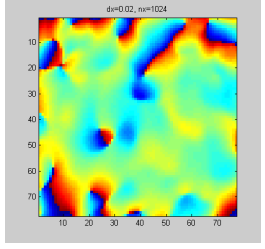
WaveTrain is tempus-based tool for high fidelity modeling of advanced optical systems

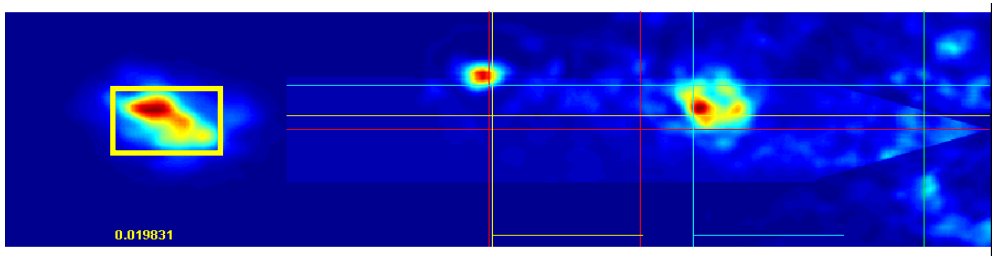


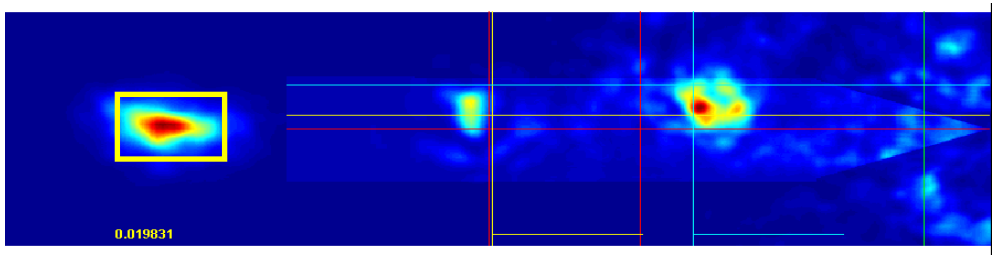










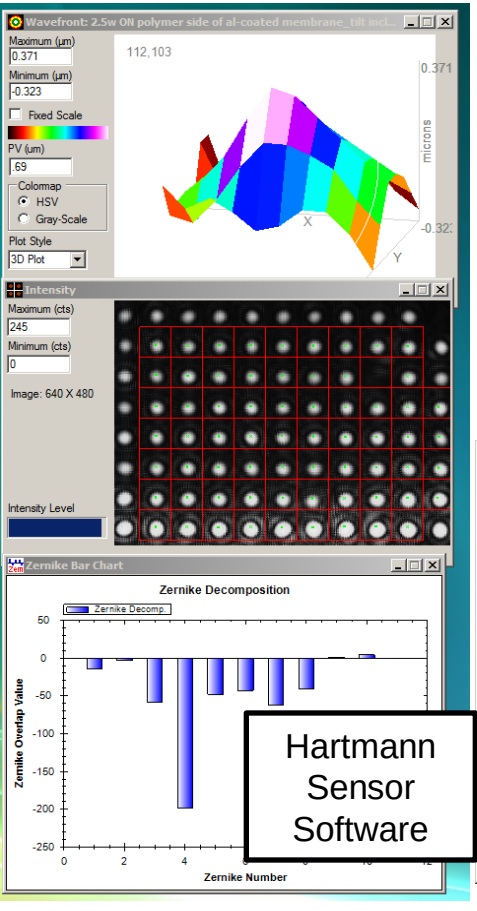


AOS Products

Hartmann Sensors

Webcam HWFS

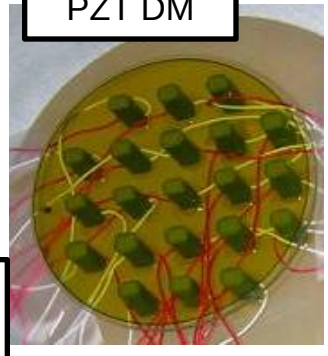
Firewire HWFS



Hartmann Sensor Software

Deformable Mirrors

Membrane DM

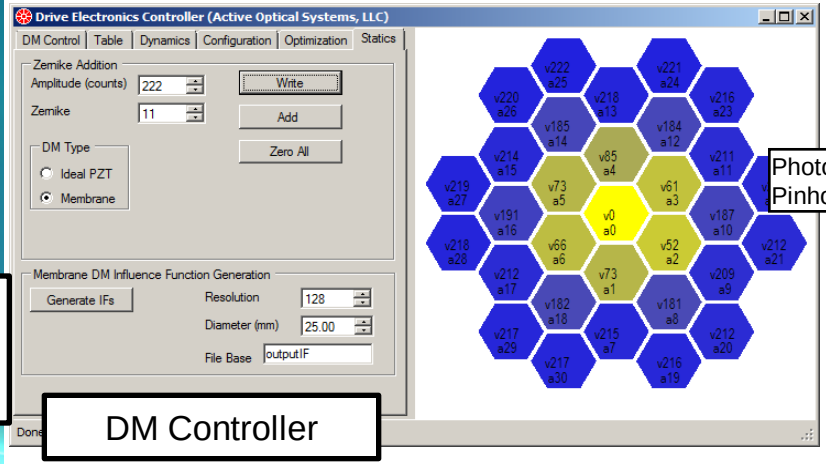


PZT DM

Computer Interface Electronics

USB Drive Electronics

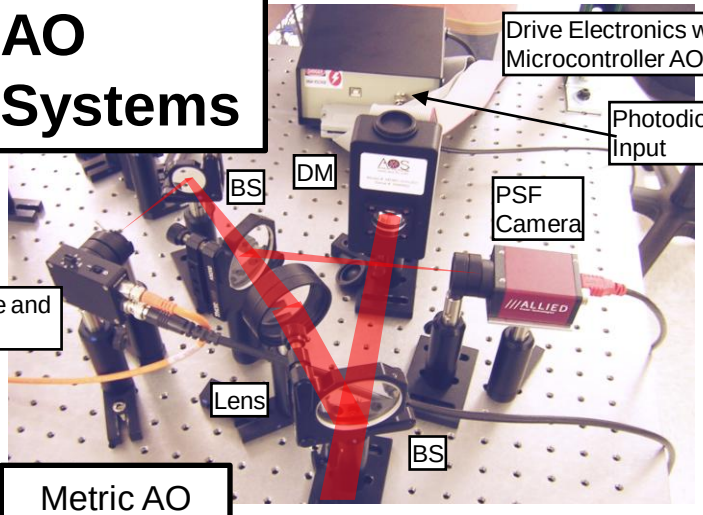
Software



DM Controller

Photodiode and Pinhole

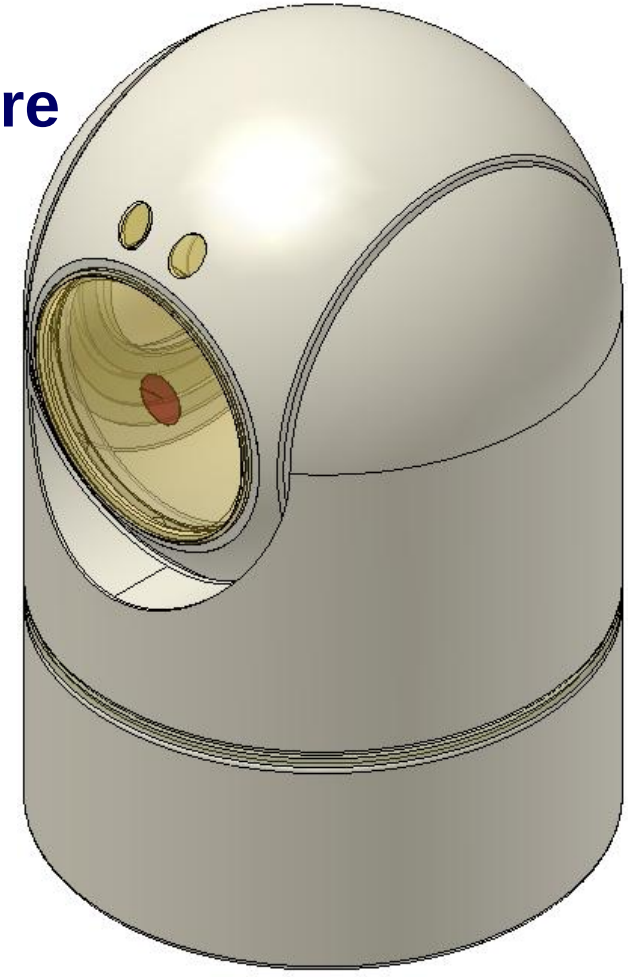
AO Systems

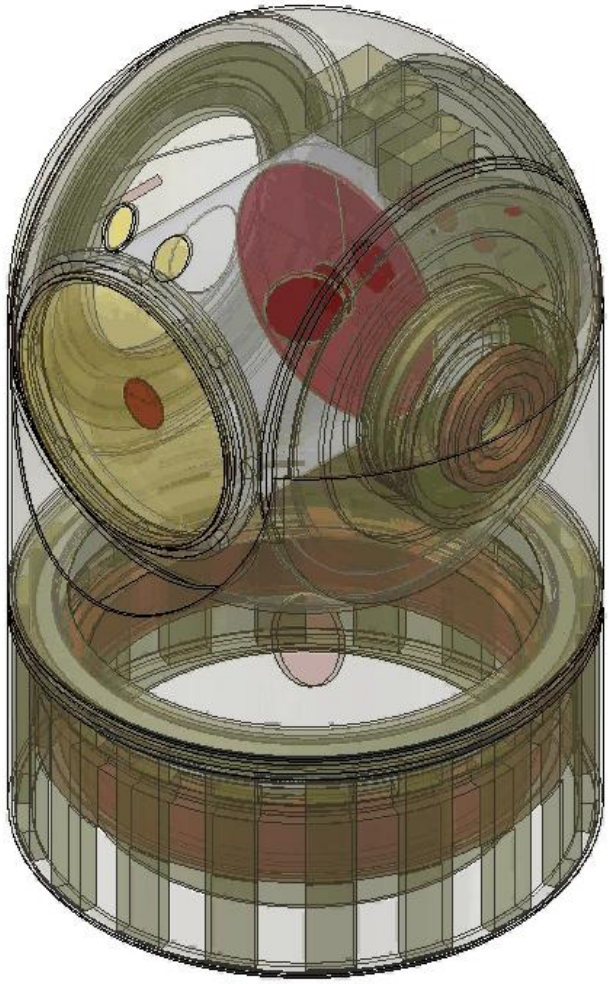


Metric AO System

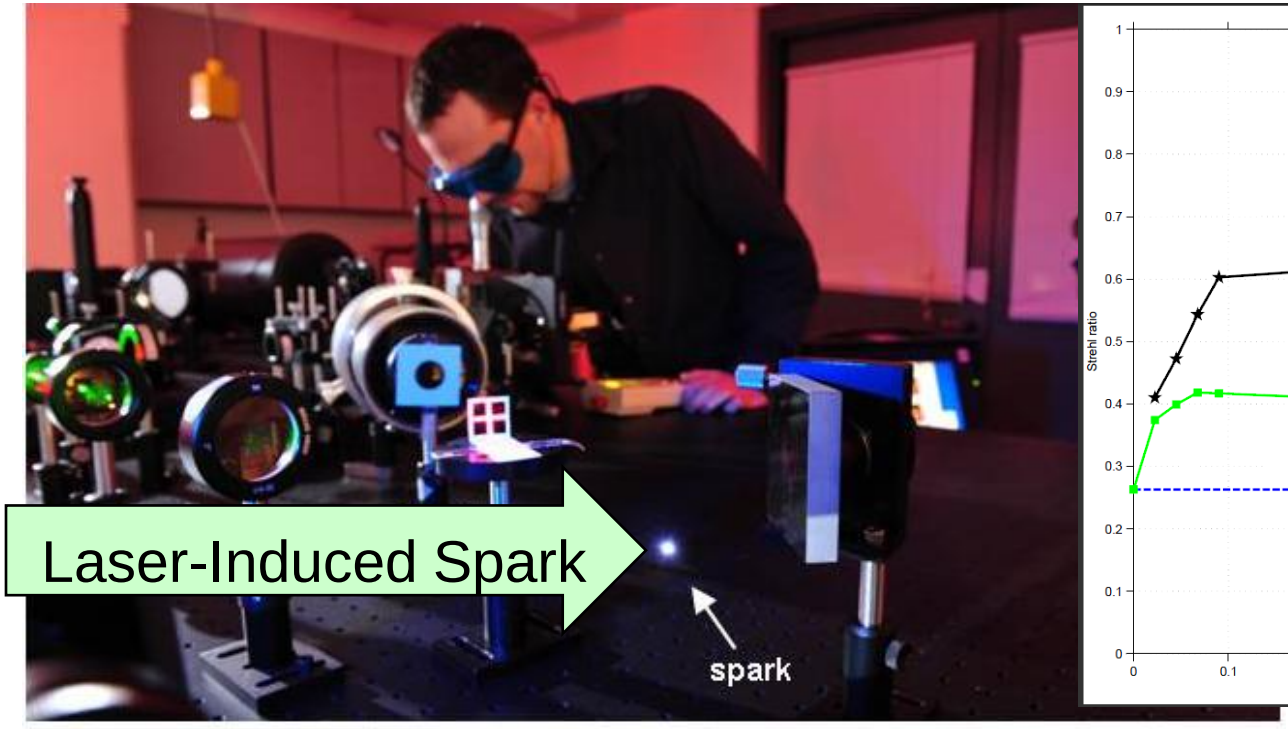
OTHELA
(Optimized Tactical HEL Architecture)

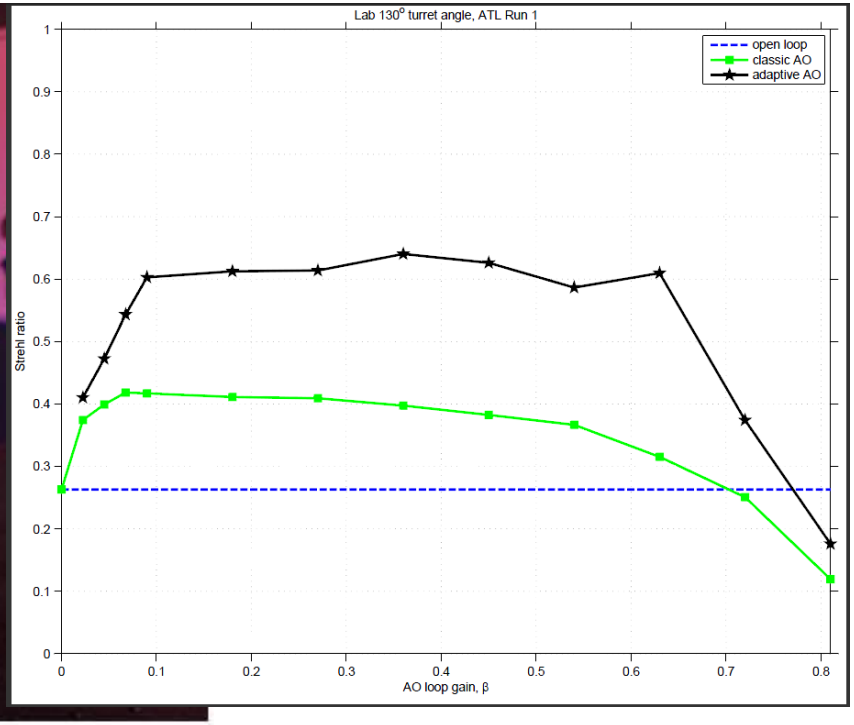
The OTHELA architecture is designed minimize footprint, weight and complexity of a tactical HEL system, with optimized controls, optics and structures.

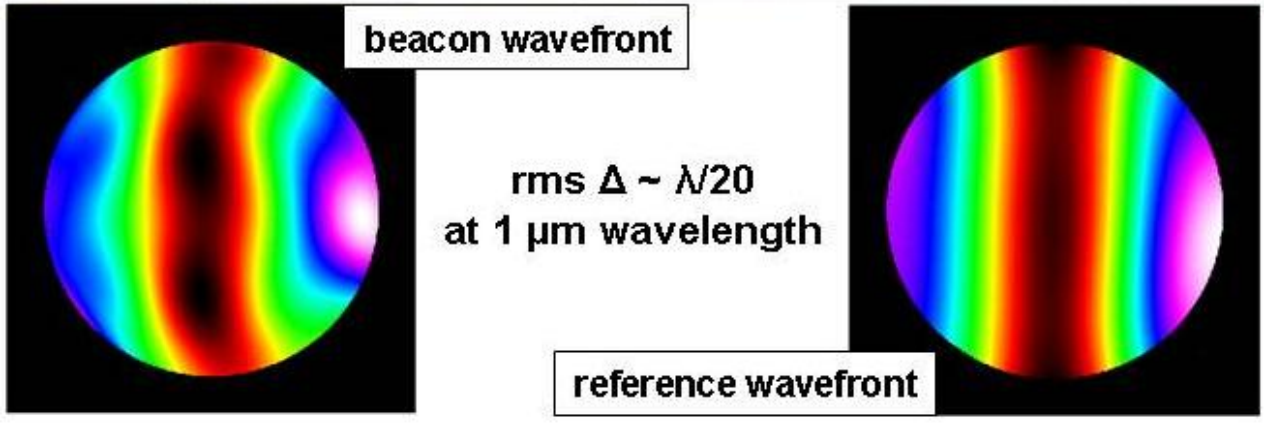




Artificial Beacons for Aero-Optics







MZA/AOS Future SBIR Opportunities

Possible future SBIR topics include…

- Scalable fabrication techniques for many actuator deformable mirrors
- Dynamic turbulence profiler
- Imaging through aero-optic flows
- General physical optics modeling enhancements for WaveTrain
  - Polarization, 3D beam path geometry, nonlinear interactions, etc.
- Enhancements to the tempus simulation framework
  - Surrogate-based optimization, automatic generation of surrogate models, integrated 3D modeling, etc.
- Application specific modeling requirements