

**NEW ACTUATORS  
WITH STEPPER MOTORS**

**LIFETIME  
IMPROVEMENT**

**VACUUM  
COMPATIBILITY**

**OPTIMIZED  
FOR YOUR LASER BEAM**



The first mechanical deformable mirror dedicated to ultra intense lasers that can perform adaptive optics correction during full power operation

## A UNIQUE SET OF ADVANTAGES

- Optimized design for your laser beam
- Large correction capability
- Excellent optical quality with active flat better than 10 nm RMS and minimal print through effect
- Dielectric, metallic or hybrid coating
- Correction frequency up to 10 Hz
- Easy maintenance with replaceable substrate and actuators
- Mirror shape maintained even without electrical power
- Actuator technology patented by Imagine Optic
- Compatible with WaveTune software and HASO wavefront sensor

Contact us for more information: [contact@imagine-optic.com](mailto:contact@imagine-optic.com) or +33 1 64 86 15 60



ILAO Star is the most advanced mechanical actuator-based deformable mirror dedicated to ultra-intense lasers. It combines already proven principles from the previous generations of mechanical deformable mirrors with innovative developments fostered by tens of customers.

Our new mechanical actuators shape continuously the wavefront with nanometer accuracy, at high speed, and without unwanted intermediate shapes. As a result, the user can perform adaptive optics correction at full laser-power operation. With our new mechanical design, actuator's motors have long lifetime, and the deformable mirror is easier to integrate with fewer flexible cables on the rear side.

## Optimization

Imagine Optic works closely with you to customize the deformable mirror in order to achieve the best possible corrections according to your laser beam characteristics

- Beam size: from 20 to 500 mm
- Intensity profile: Gaussian, super-Gaussian, or top hat
- Beam shape: circular, elliptical, square, or rectangular
- Incident angle: 0°, 45°, or other
- Coating: dielectric, metallic, or hybrid
- Environment: ambient or vacuum
- Correction: for example up to 4th, 6th, or 8th order Zernike modes and more if necessary

## Wavefront correction and beam control

Our adaptive system is a turnkey solution for ultra-intense lasers. It includes ILAO Star deformable mirror, HASO4 wavefront sensor, and WaveTune adaptive optics software interfacing seamlessly together via one ergonomic control interface. Our Phase Retrieval algorithm PhaRAO is also available in WaveTune as an optional module. With the help of a simple CCD camera, PhaRAO enables users to control and optimize the focal spot directly in the interaction chamber.

WaveTune also allows users to monitor very precisely the pointing of beam thanks to all new functions included in the software.

## Maintenance

ILAO Star allows an easier and safer maintenance than in the previous mechanical deformable mirror generations. Actuators maintenance has been simplified and consists in a simple operation exclusively from the back of the mirror. The reflecting substrate is replaceable in case of laser induced damage.

## Security

The security of closed-loop operation at full laser power is ensured by our new hardware and software architecture. ILAO Star wavefront correction does not produce unwanted intermediate shapes between iterations, thanks to a whole new set of command strategies and improved actuators.

New security functions have been implemented in WaveTune, including synchronization with laser to change the mirror form only in the absence of the laser pulse.

## And much more...

Our adaptive optic system is compatible with TANGO for remote monitoring and control. Other options, such as a beam reducer, gimbal rotation stages are available. For more details, please contact us.