Wave Suite

WAVEVIEW
WAVEFRONT ANALYSIS

WAVETUNE
ADAPTIVE OPTICS CONTROL

WAVEKIT
SOFTWARE DEVELOPMENT KIT

The most advanced metrology and adaptive optics control software package in the market backed by >20 years of wavefront sensing and control experience.

A UNIQUE SET OF ADVANTAGES

- Complete software package for high-end applications
- Continuous improvement driven by customers' feedback
- User friendly and intuitive GUI
- Easy installation

Contact us for more details: contact@imagine-optic.com or +33 (0) 1 64 86 15 60

imagine optic

WaveView

UNLEASH THE FULL POWER OF WAVEFRONT METROLOGY

Specifically designed for HASO™ wavefront sensors, WaveView can be used by both beginners and experts. Behind the ergonomic interface, powerful functionality (more than 150 features) unique to the HASO™ series awaits for you.

Using only one program, you can measure phase and intensity simultaneously and independently. Each user can customize the WaveView screen layout and import or export data in several formats.

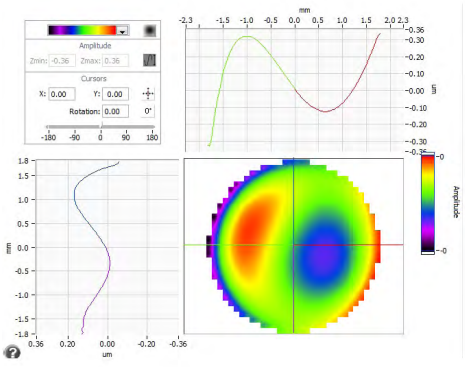
WITH WAVEVIEW, YOU CAN

- PERFORM ZONAL AND MODAL WAVEFRONT RECONSTRUCTION
- VIEW THE RAW CAMERA DATA
- DISPLAY WAVEFRONT AND INTENSITY MAPS
- MODIFY VARIOUS ALGORITHM SETTINGS
- ACTIVATE OPTIONS TO SIMULATE WAVE PROPAGATION AS THE POINT SPREAD FUNCTION (PSF), STREHL RATIO, MODULATION TRANSFER FUNCTION (MTF) AND ADVANCED LASER PARAMETER M^2
- RECONSTRUCT A FULL-PUPIL WAVEFRONT EVEN WITH RANDOM OBSTRUCTIONS

WAVEFRONT ANALYSIS

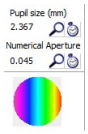
Wavefront reconstruction

Wavefront reconstruction by either Zonal or modal methods from computed local slopes*



Modal coefficients

Displaying coefficients that result from the projection of slopes* on the bases of Zernike or Legendre polynomials



N°	Equation	Name	Value (um)
1	$\rho\cos(\theta)$	Tilt at 0°	-43.0665
2	$\rho\sin(\theta)$	Tilt at 90°	6.2828
3	$2\rho^2 - 1$	Focus	13.5711
4	$\rho^2\cos(2\theta)$	Astigmatism at 0°	-0.5241
5	$\rho^2\sin(2\theta)$	Astigmatism at 45°	-1.5963
6	$(3\rho^2-2)\rho\cos(\theta)$	Coma at 0°	-0.1700
7	$(3\rho^2-2)\rho\sin(\theta)$	Coma at 90°	-0.2504
8	$6\rho^4 - 6\rho^2 + 1$	3th order spherical aberration	-0.0879

Throughout Shack-Hartmann formalism, local slope* is defined as the tangent of the angle between the wavefront and a theoretical perfect plane located on the principal object plane of the microlens matrix

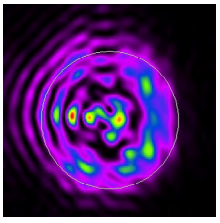
SOFTWARE OPTIONS

PSF

Encircled energy calculation

Strehl ratio

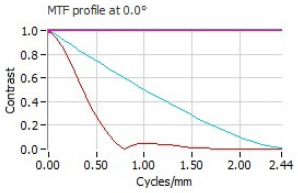
Comparing the actual maximum intensity at the focal plane to a perfect theoretical distribution of intensity without aberrations



MTF

Representing MTF as a curve, using contrast to indicate the spatial frequency in a given direction

Calculating for all directions at the same time



M^2

Calculating the propagation of the electromagnetic field at different planes

Reconstructing the envelope of propagation

Providing information on the waist and divergence of the beam or in a given direction

WaveTune

NEW APPROACH FOR ADAPTIVE OPTICS

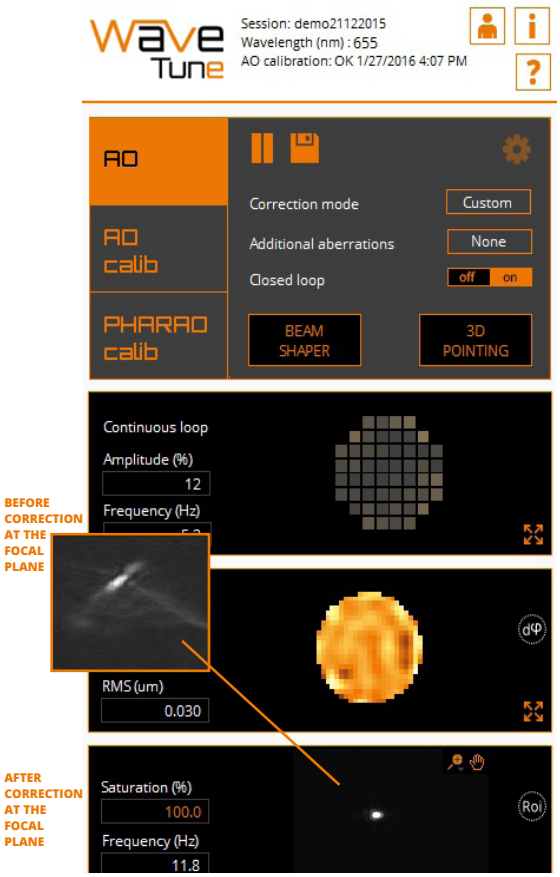
WaveTune is an easy-to-use adaptive optics control software with an intuitive user-oriented interface. It is perfectly adapted to HASO™ sensors as well as a wide variety of active optics including ILAO Star™, Mirao™ and Spatial Light Modulator (SLM).

WaveTune controls active optics and HASO™ wavefront sensor in a feedback loop. It computes commands to be sent to the deformable element according to the measurement supplied by the wavefront analyzer. WaveTune is optimized for high-power laser applications.

WITH WAVETUNE, YOU CAN

- CONTROL HASO™ AND ACTIVE COMPONENTS BASED ON MEASUREMENTS
- MEASURE AND ANALYZE INFLUENCE MATRIX
- CORRECT THE WAVEFRONT IN OPEN-LOOP OR CLOSED-LOOP PROCESS
- INTEGRATE SECURITY CHECK FUNCTIONS WITH DIFFERENT CONFIGURATION OF SETTINGS
- MODIFY THE TARGET WAVEFRONT IN REAL-TIME USING ZERNIKE POLYNOMIALS
- CREATE SESSIONS TO CONTROL DIFFERENT OPTICAL SET-UPS WITH A SINGLE SOFTWARE
- CONNECT WITH WAVEVIEW TO EMPLOY ITS ADVANCED WAVEFRONT ANALYSIS FEATURES
- CONTROL A FULL-PUPIL WAVEFRONT EVEN WITH RANDOM OBSTRUCTIONS

WAVEFRONT CORRECTION



SOFTWARE OPTION

Pharao, a "Phase Retrieval" software

Diagnosis camera for correcting residual aberrations at the end of the laser chain

Focal spot optimization module for WaveTune software

Wave kit

ADD INDIVIDUALITY TO YOUR APPLICATION

Imagine Optic's Software Development Kit (SDK) provides the building blocks that one can write fully customized software for specific applications using HASO™ and wavefront correction active optics including ILAO Star™ and Mirao™.

The WaveKit tool enables integration of Imagine Optic solutions into external end-user applications. This SDK is addressed to different programming users such as engineers, scientists and researchers.

WITH WAVEKIT, YOU CAN

- INTEGRATE IMAGINE OPTIC SYSTEMS INTO YOUR OWN APPLICATION USING EITHER THE C, THE MATLAB OR THE LABVIEW SDK
- FULLY CUSTOMIZE YOUR ADAPTIVE OPTICS SET-UPS IN OPEN- OR CLOSED-LOOP
- EXPERIENCE MORE THAN SEVERAL HUNDREDS FUNCTIONS AND TENS OF EXAMPLES

3 WAVEKIT EDITIONS ARE AVAILABLE

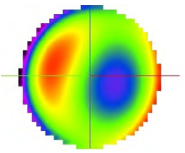
WAVEKIT FULL EDITION

WAVEKIT METROLOGY EDITION

FOR CONTROLLING OPTICAL METROLOGY BENCH EQUIPPED WITH HASO™

HASO™ CAMERA

WAVEFRONT ANALYSIS



INTENSITY ANALYSIS

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MODAL WAVEFRONT ANALYSIS

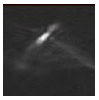
WAVEKIT AO EDITION

FOR CONTROLLING ACTIVE OPTICS AND WAVEFRONT SENSOR

ACTIVE OPTICS

WAVEFRONT CORRECTOR DIAGNOSIS

BEFORE



AFTER

INFLUENCE MATRIX ANALYSIS

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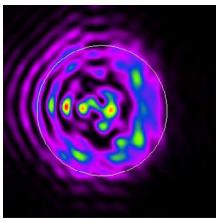
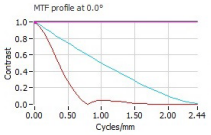
OPEN OR CLOSED-LOOP CONTROL SYSTEM

AVAILABLE OPTIONS

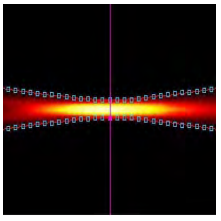
PSF



MTF



M^2



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