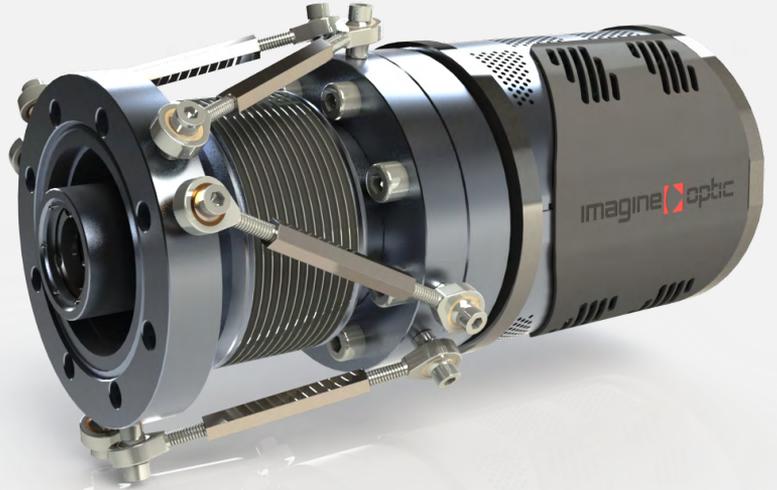# HASO
EUV

WAVEFRONT SENSOR
FOR EUV AND SOFT X-RAY

ACHROMATIC
WAVEFRONT SENSOR

COMPACT
AND VERSATILE

EASY
TO USE

"A groundbreaking and indispensable tool for soft X-ray beam optimization, alignment of soft X-ray optics and plasma diagnostics over the last 10 years of my research."

Dr. Marta Fajardo
Instituto de Plasmas e Fusão Nuclear
Instituto Superior Técnico, PORTUGAL

WHY TO BUY

- λ/50 RMS absolute accuracy and λ/200 RMS repeatability

- Optimized for a certain wavelength range, such as 4-40 nm range (30-300 eV)*

- Patented Hartmann technology

- Suitable for mono- and polychromatic beams

- Hydrocarbon free and compatible with 10^{-7} mbar

- C, LabVIEW and MATLAB compatible core engine SDK of WaveView

- External trigger capability

*HASO EUV wavefront sensors can be optimized for other wavelengths. Contact Imagine Optic for more details: contact@imagine-optic.com or +33 1 64 89 15 60

imagine optic ™

HASO EUV : THE ADVANCED METROLOGY WAVEFRONT SENSOR

Imagine Optic's HASO EUV wavefront sensor, developed in collaboration with LOA laboratory and the SOLEIL synchrotron, is the only device of its kind that offers you the extreme precision and direct measurement functionality needed for today's most demanding laboratory and industrial applications.

- Synchrotron, EUV-FEL , and laser-driven secondary source alignment and characterization
- Micro- and nano-focusing, automatic alignement of EUV optical systems
- Dense plasma diagnostics

- Perfectly adapted for laboratory applications
- Compatible to coherent and non-coherent sources
- Usable for closed- and open-loop adaptive optics

Designed and built in collaboration with our customers to meet their needs as the top priority, the HASO EUV incorporates our patented rotated square technology to offer high resolution and wide dynamic range, making it the ideal choice for EUV lithography, gas or solid high-harmonic generation, synchrotron and EUV-FEL beam analysis. When used in combination with adaptive optics, the EUV wavefront sensor becomes a powerful tool that allows you to achieve with micro - and nano - focusing, high Strehl ratio and precise control of the focal spot shape.

WaveView SOFTWARE

- WaveView is the most advanced wavefront measurement and analysis software. It offers more than 150 functions and tools optimized for a wide range of highly demanding applications. WaveView development philosophy is based on twenties of years of customer's feedback, improving the user experience at each version. Modules dedicated to PSF, Strehl ratio, MTF, M² are available.

- WaveKit is a SDK in C, LabVIEW and MATLAB, providing the basis blocks on which one can build a fully customized software for specific HASO based applications or WaveView data processing routines. WaveKit is available on request.

Specifications	Standard HASO EUV	HASO EUV with high NA
Aperture dimension	13 x 13 mm²	Ø20 mm
Number of sub-apertures dedicated for analysis	72 x 72	110 across diameter
Curvature dynamic range / NA	± 0.5 m to ∞ / 0.013	± 0.1 m to ∞ / 0.15
Repeatability (rms)	~ λ/200	~ λ/200
Wavefront measurement accuracy in absolute mode (rms)	~ λ/50 @ 13.5nm	~ λ/50 @ 30 nm
Wavefront measurement accuracy in relative mode (rms)	~ λ/100 @ 13.5nm	< λ/100 @ 30 nm
Tilt measurement sensitivity (rms)	0.05 µrad	0.1 µrad
Spatial sampling	~ 180 µm	~ 150 µm
Minimum readout time	~600 ms (2 MHz digitization)	~2 s
Working photon energy (wavelength)*	30 - 300 eV (4 - 40 nm)	27.6 - 124 eV (10 - 45 nm)
Compliant vacuum (hydrocarbon free)	10^{-7} mbar	down to 10^{-6} mbar**
Operating system	Windows 7 (x86 / X64)	Windows 7 (x86 / X64)
Dimensions	Ø 115 mm, L 270 mm	60 x 80 x 170mm³
Sensor type	Vacuum interface	In vacuum
Interface / Power supply	USB 2.0 / included	USB 2.0 / included

* Other photon energy or wavelength ranges are possible on request.

** Required dynamic vacuum

www.imagine-optic.com