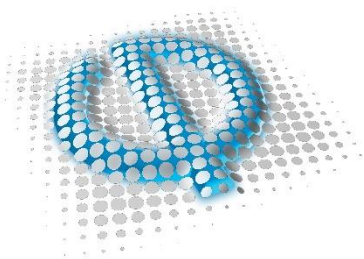


KALEO KIT:
THE NEW MODULAR
WAVEFRONT TESTING
SOLUTION FROM UV TO
MWIR



PHASICS
the phase control company



Phasics company Profile

Well established

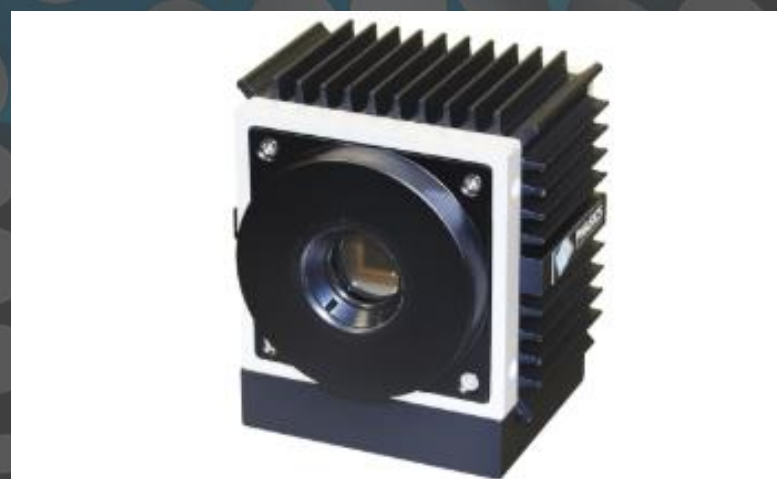
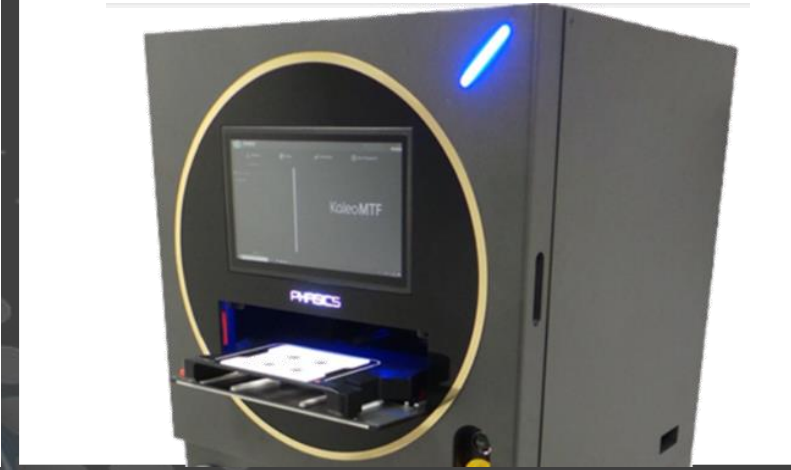
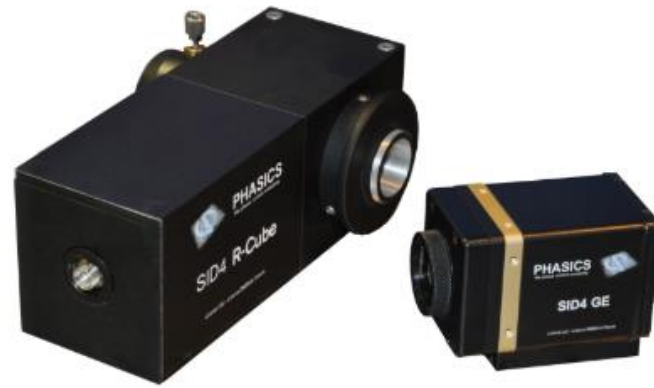
- Created in 2003
- ISO 9001 certified
- 40 Employees

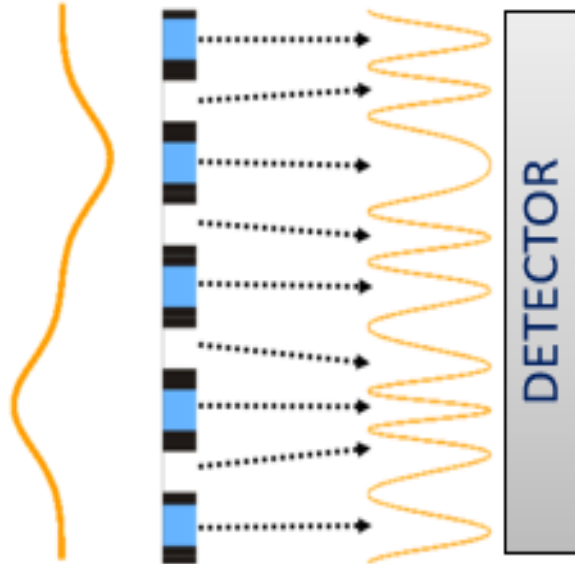
Core Competency

- High-resolution wave front measurement from 190nm to 14 μ m

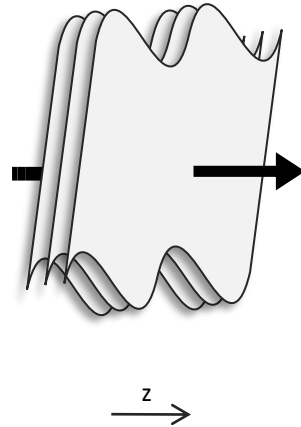
Patented Technology

- Quadri-Wave Lateral Shearing Interferometry
- Spin-off from French laboratories LULI (CNRS) and ONERA



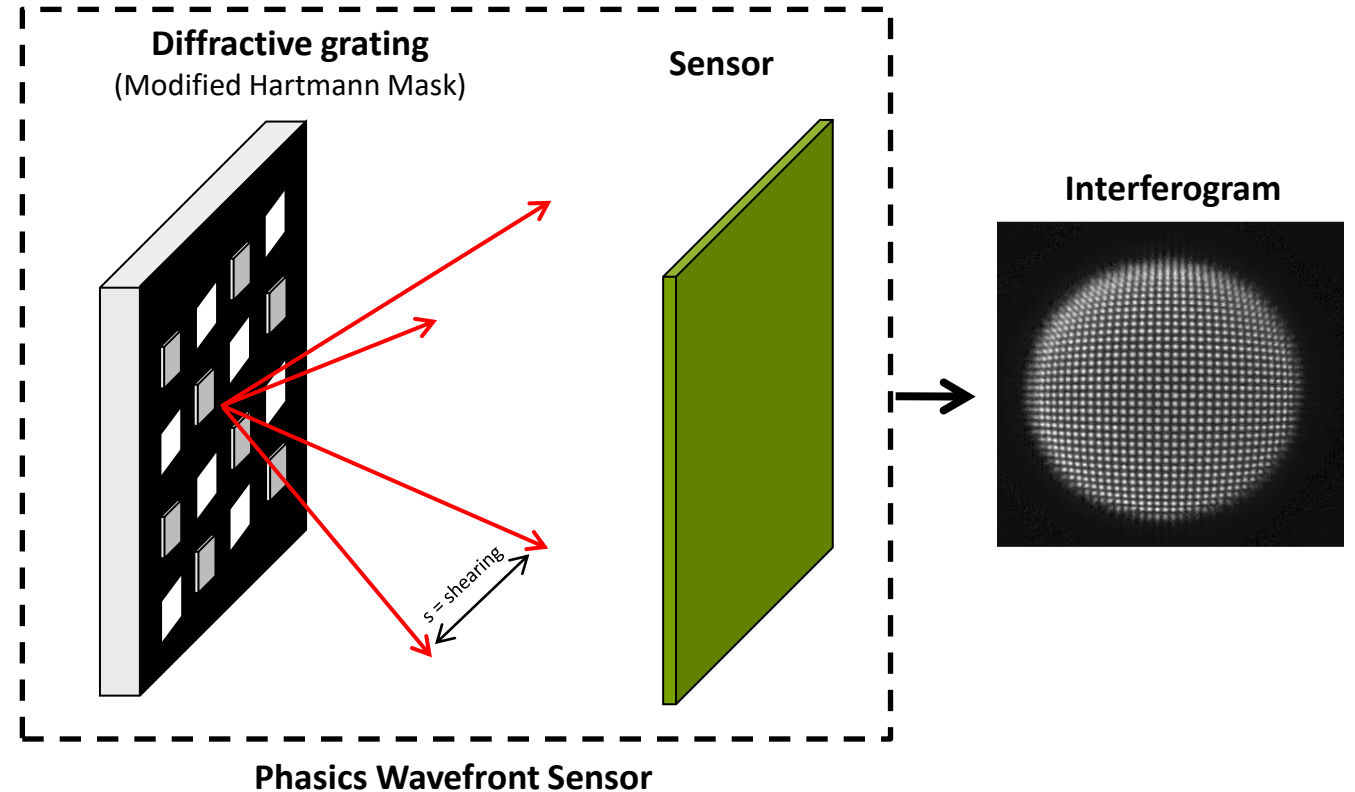


Incident Beam
distorted wavefront

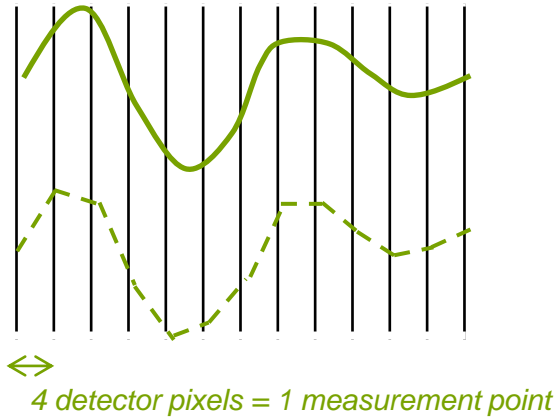


Measurement principle

Interferogram generated by the diffractive grating in front of the CCD.

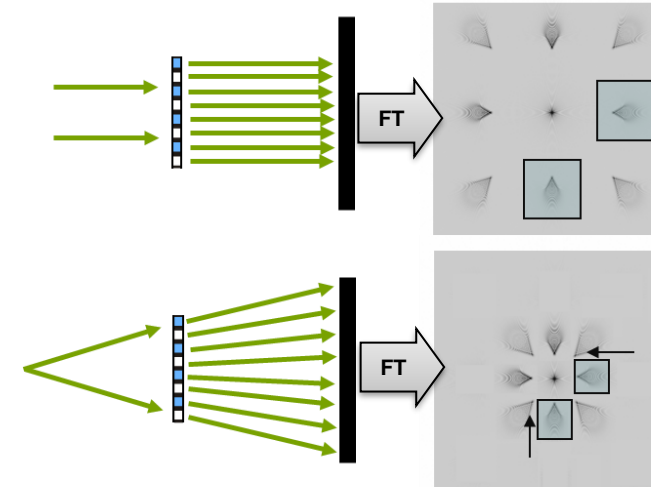


High resolution

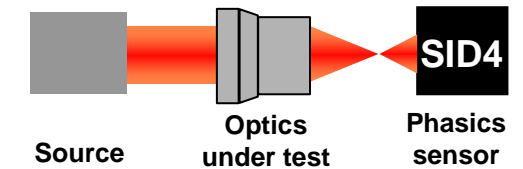


- Reduced uncertainties & noise
- High order Zernike projection
- High sampling up to 852 x 720

Large dynamics



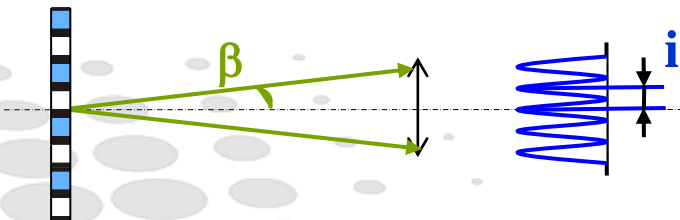
- High dynamics up to 500 μm PtV
- Large aberrations measurement
- Handles high NA



Achromaticity

Diffractive optics

Interferometry



- Interferogram is not wavelength dependent
- The technology itself is achromatic

Achromatic three-wave (or more) lateral shearing interferometer
Jérôme Primot, L. Sogno
November 1995 *Journal of the Optical Society of America A* 12(12):2679-2685

Kaleo Kit

Stand-alone wavefront sensors

Integrated test machines

Custom optical test bench

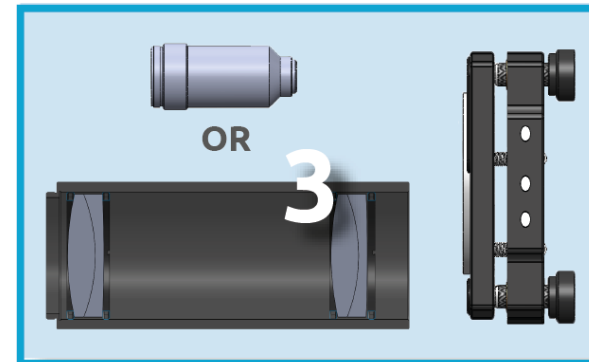
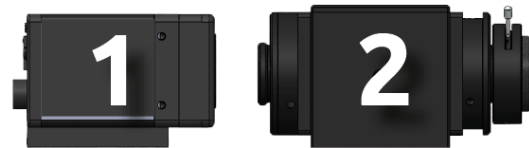


GOAL

- Create an off-the-shelf solution that can fit a broad range of specific measurement requirements:
 - Measurement configuration
 - Test wavelength
 - Pupil diameter
 - Accuracy

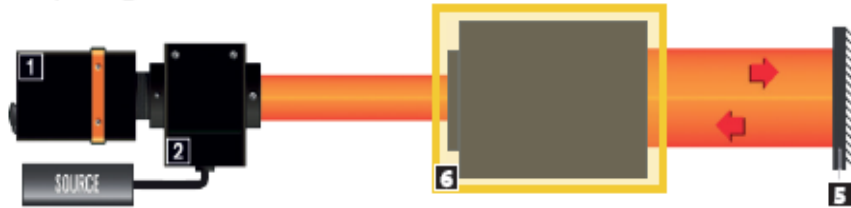


PRINCIPLE:

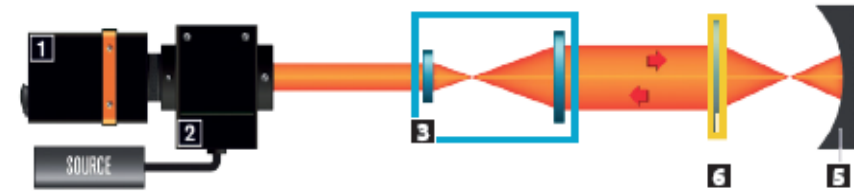


For a broad range of applications

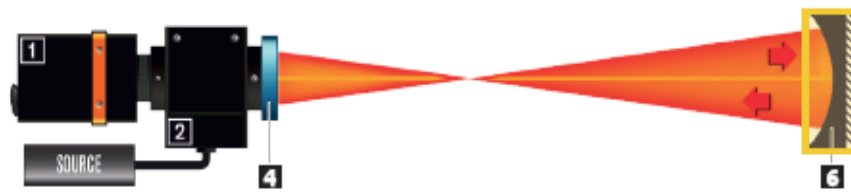
- Telescope alignment and characterization



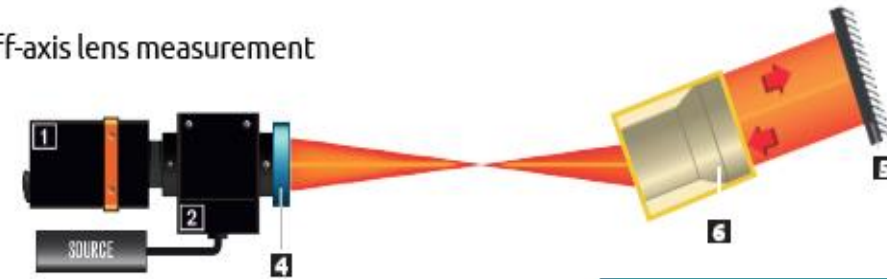
- Large diameter lens & objective measurement in any configuration



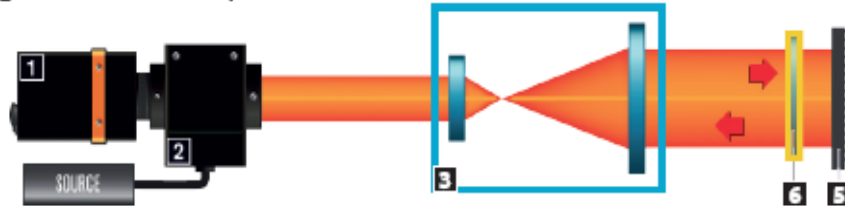
- Concave mirror measurement



- Off-axis lens measurement



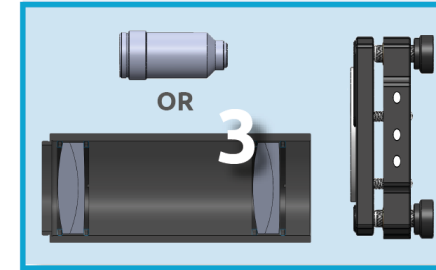
- Large diameter flat optics characterization: Filters, Windows, Polarizing optics



- 1 SID4 Wavefront sensor
- 2 R-Cube
- 3 Beam expander
- 4 Focusing system
- 5 Reference mirror
- 6 System under test

Kaleo Kit
modules

Available modules from UV to MWIR



SID4 Model	Spectral range (nm)	Sampling (px)	Wavelength (nm)		Beam expander Exit pupil ϕ (mm)	Focusing system F#
SID4-UV	250-400	250x250	365	810	8	0.6
SID4	400-1100	160x120	405	850	15	1
SID4-HR	400-1100	400x300	530	940	30	1.6
SID4-SWIR	900-1700	80x64	625	1050	60	2.5
SID4-SWIR-HR	900-1700	160x128	740	1550	130	5
SID4-DWIR	3000-5000	160x120	780	3900		10

Conclusion

■ Broad range of capabilities

- TWE / WFE
- RWE / SFE
- MTF / PSF
- On and off axis

■ Broad range of configurations

- Single pass
- Double pass
- Point to point
- Infinite to finite

■ Broad range of solutions

- Stand-alone wavefront sensors
- **Modular measurement solution**
- Integrated test station
- Custom optical test bench



Thank you, feel free to ask questions !

For more details:

- Visit our website : www.phasics.com

- Contact us: contact@phasics.fr

