Kaleo MultiWAVE

multi-wavelength,
large dynamic range
interferometer

PHASICS
the phase control company

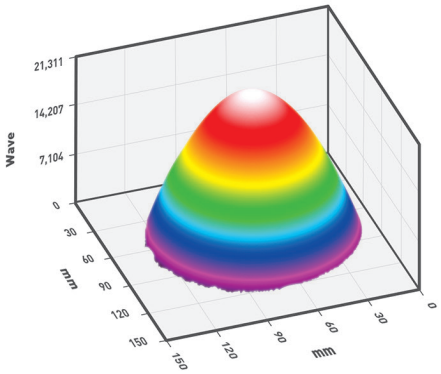
Interferometric solution for filters and coated optics testing at dedicated wavelengths

PHASICS is innovating in optical metrology with a new instrument able to measure both transmitted and reflected wavefront error (TWE/ RWE). Coated and uncoated optics can be qualified over a diameter of 5.1 inches (130 mm) at their working wavelengths.

Kaleo MultiWAVE is an advantageous alternative and cost-effective solution to the purchase of several interferometers. The system offers a **measurement accuracy comparable to Fizeau interferometry.**

Kaleo MultiWAVE works at different wavelengths to perform qualification of optics and coatings at their working wavelengths.

PHASICS - the phase control company



HIGH DYNAMIC RANGE

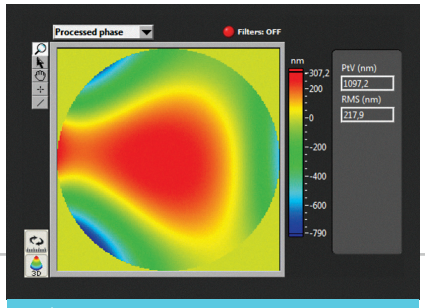
MEASUREMENT OF LARGE ABERRATIONS

- More than 20λ of aberration can be measured with Kaleo MultiWAVE
- More dynamic range than a classical Fizeau interferometer

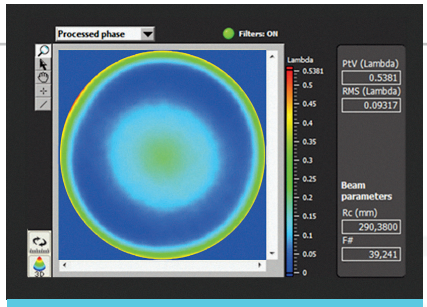
RWE of 5'' wide band pass filter at 653nm

APPLICATIONS

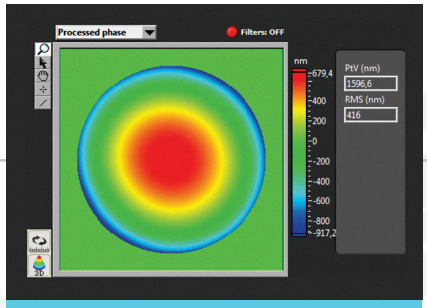
- Coated optics and filters testing at real operating wavelengths
- High dynamics surface testing



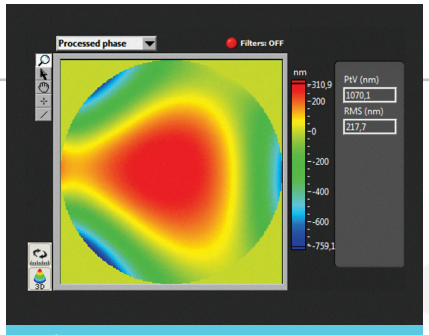
4' plane mirror testing at 625nm



TWE of 5'' wide band pass filter at 780nm



RWE of 5'' narrow band pass filter at 780nm



4'' plane mirror testing at 1050nm

ACHROMATIC SYSTEM

1. Same results at any wavelength
2. The instrument can be used at any wavelength to match the sample's operating wavelength

KEY FEATURES

- Up to 8 wavelengths
- High dynamic range
- WFE & MTF measurement
- Insensitive to vibration
- Compatible with MetroPro & ISO

SYSTEM

Configuration	Double pass
Measurement capability	RWE of reflective surfaces TWE of transparent optics
Number of wavelengths per instrument	1 or 2 (standard), up to 8 (custom)
Custom wavelengths	Any wavelength from 193 nm to 14 µm Including: UV: 266, 355, 405 nm VIS / NIR: 550, 625, 780, 940, 1050 nm SWIR / MWIR / LWIR: 1.55, 2.0, 3.39, 10.6 µm
Clear aperture	5.1" (130 mm)
Beam height	108 mm
Alignment system	Live phase & Zernike coefficients display
Polarization	Compatible with depolarizing optics
Alignment FOV	+/- 2°
Accuracy (TWE)	<20 nm RMS
Pupil focus range	+/- 2.5 m
Dimensions	910 x 600 x 260 mm, 25 kg
Vibration isolation	Not necessary

PERFORMANCE(1)

RMS repeatability(2)	< 0.7 nm (< λ / 900)
Accuracy	80 nm PV (3)
Dynamic range (defocus)	500 fringes (SFE = 150 µm)
Sample reflectivity range	~4% - 100%

(1) On a 4" pupil size, with a 625 nm source
(2) RMS repeatability is defined by 2 times the standard deviation of the RMS value for 36 sequential measurements of a 4" reference mirror.
(3) For a 1 µm PV defocus

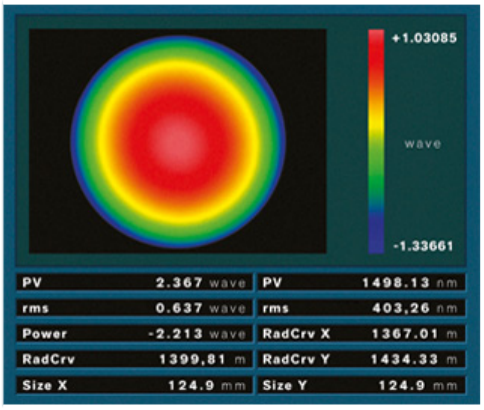
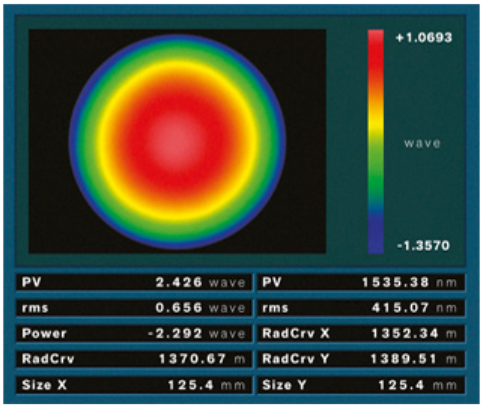
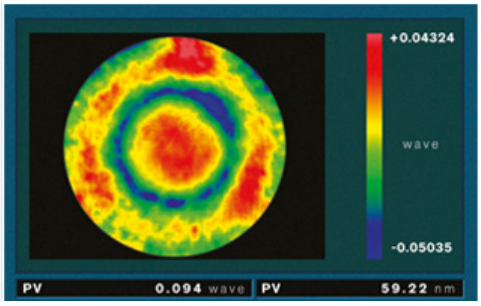
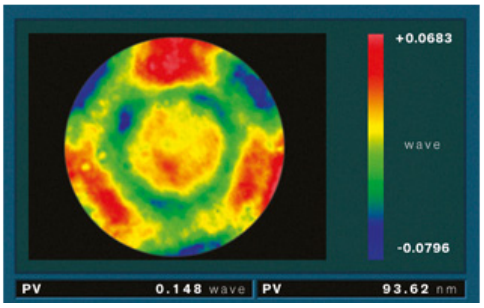
MARKETS

Optics & Filters manufacturers

Space & Defense

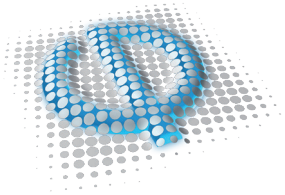
Automotive

RESULTS SIMILAR TO FIZEAU INTERFEROMETRY

	FIZEAU INTERFEROMETER	KALEO MULTIWAVE
RAW MEASUREMENT		
RESIDUAL (raw power, ast, coma, spherical)		

NBP-780nm - The difference between the 2 measurements on the same pupil is below 40 nm pTv

		FIZEAU	PHASICS
Diameter (mm)		124.9	125.4
RWE (nm PtV)		1498.13	1535.38
RWE (nm RMS) without PST/TLT/PWR		35.2	28.1
RWE (nm RMS) without ST/TLT/PWR/AST/CMA/SA		9.1	12.9
ISO 10110	SAG (fr)	5.13	5.04
	IRR (fr)	0.75	0.61
	RSI (fr)	0.34	0.23
	RMSt (fr)	1.477	1.459
	RMSi (fr)	0.129	0.103
	RMSa (fr)	0.085	0.059



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