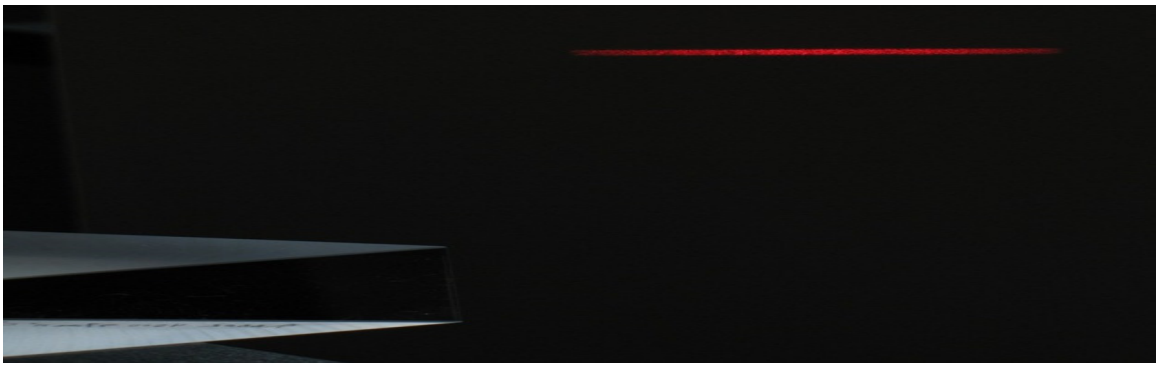
N-Slit Laser Interferometer

Interferometric Optic's *N*-Slit Laser Interferometer (*N*SLI) applicable to:

- Assessment of transmission gratings and optical surfaces
- Detection of clear air turbulence for aviation
- Interferometric imaging
- Interferometric metrology and microdensitometry
- Interferometric microscopy
- *N*-slit interference
- *N*-slit interferometry
- Secure interferometric communications

Based on multiple-prism beam expansion and digital detection the *N*-slit interferometer allows for the rapid interferometric characterization of *transmission optical surfaces in general*. An epic advance over traditional point-by-point incoherent microdensitometers and point-by-point incoherent microscopes.



Extremely elongated Gaussian beam (with a 30 μm height, at its center, and a 60000 μm width) used as illumination source in the *N*SLI. The last stage in the multiple-prism beam expansion array is shown at the lower left. Note: the beam in this image appears much higher due to saturation in the detector array capturing the image. This type of extremely elongated coherent illumination, first demonstrated in 1987 , has also become known as 'light sheet illumination.'

Further applications include:

Characterization of arrays of micro holes and/or micro nozzles
Characterization of biomedical and organic molecular arrays
Characterization of crystalline surfaces
Characterization of molecular, and digital, imaging surfaces
Characterization of textiles
Detection of clear air turbulence at airport's runway thresholds
Forensic science
Optical metrology of surfaces and transmission gratings
Secure space-to-space interferometric communications

*N*SLI Specifications

Model	Wavelength	Beam dimensions†	S/N
*N*SLI-543-1	543 nm	30 × 25000 μm	~10^7
*N*SLI-543-2	543 nm	30 × 50000 μm	~10^7
*N*SLI-594-1	594 nm	30 × 25000 μm	~10^7
*N*SLI-594-2	594 nm	30 × 50000 μm	~10^7
*N*SLI-632-1	632 nm	30 × 25000 μm	~10^7
*N*SLI-632-2	632 nm	30 × 50000 μm	~10^7

† At focal plane. The wider dimension is along the plane of propagation.
†† *N*SLI are manufactured with all US made optical components. Prices apply to laboratory size units. Larger *N*SLI, with intra interferometric lengths up to 30 m, and additional beam dimensions, available on request.

Literature

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