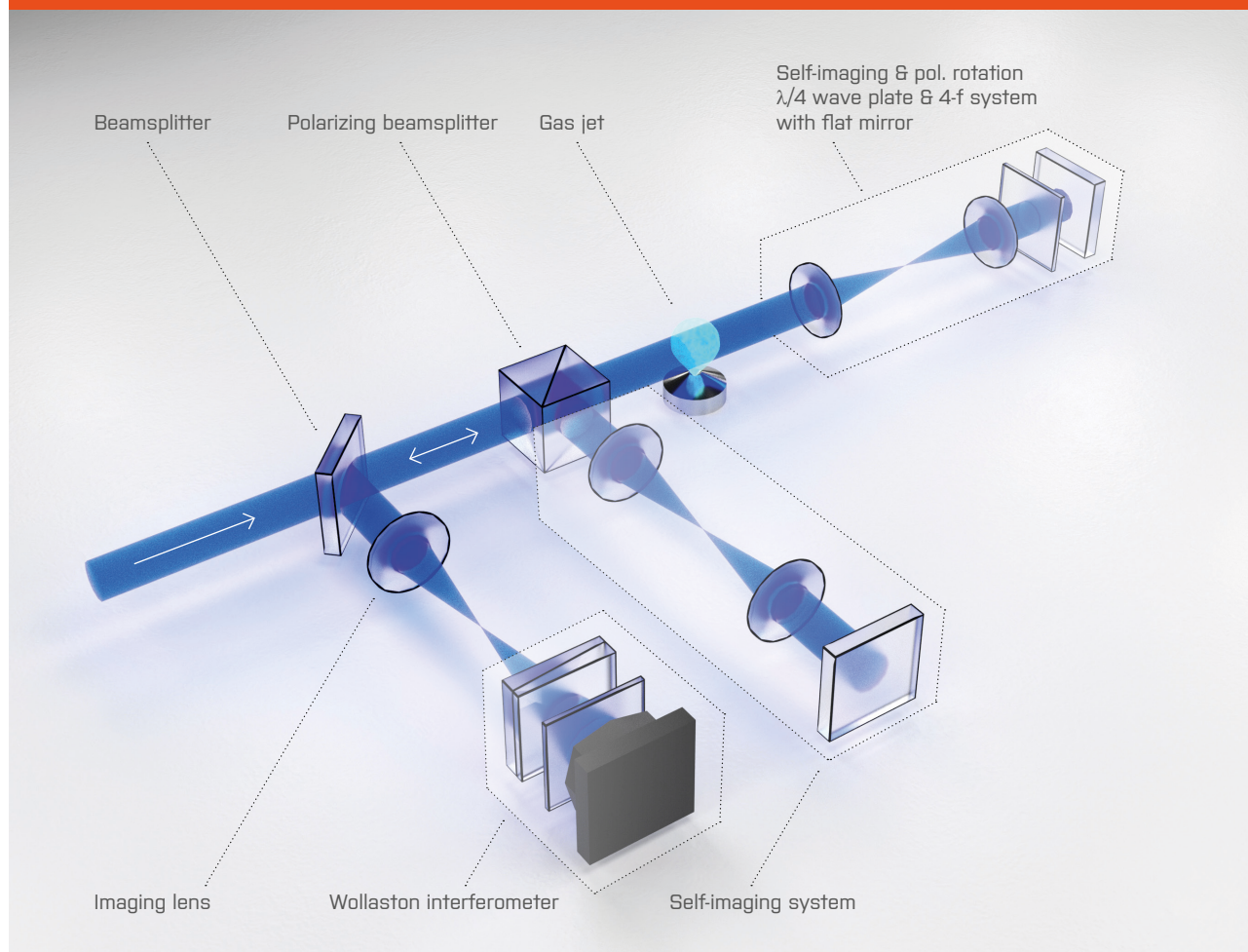


# HIGH CONTRAST IMAGING<sup>FOR</sup> METROLOGY APPLICATIONS



We have developed a new method of characterization by light with increased sensitivity. It is based on multiple interaction of the probe beam with the object of interest. The object is self-imaged between the interactions to preserve the spatial information. Our method proved to increase sensitivity for the effect of the object on probe intensity, phase or polarization.

## FEATURES

Both reflection and transmission setups

Applicable to microscopy (imaging), interferometry, holography, profilometry, polarimetry/ellipsometry

Classical trade-off between spatial resolution and a field of view

## BENEFITS

Simple optical setup, easy to align

Increases the effect of the object on the amplitude [intensity], phase and/or polarization of the probe

Two or four-fold increase in measurement sensitivity [SNR] using passive optical elements only

Applicable to both quantitative and qualitative methods

## HOW DOES IT WORK?

- Multiple interactions of the probe with the object employing object self-imaging.
- The self-imaging system can consist of a lens and spherical mirror, or an afocal system of lenses and planar mirror.

## RESULTS

Four-pass interferometry setup implemented for low density gas-jet characterization. SNR increases with the number of passes.

## PLANS

- Four-pass interferometry setup automation being implemented for fast tomographic characterization of gas jets.
- Currently testing a prototype of a high-contrast microscope (4 pass) with intensity contrast, DIC, and wide-field fluorescence setup.

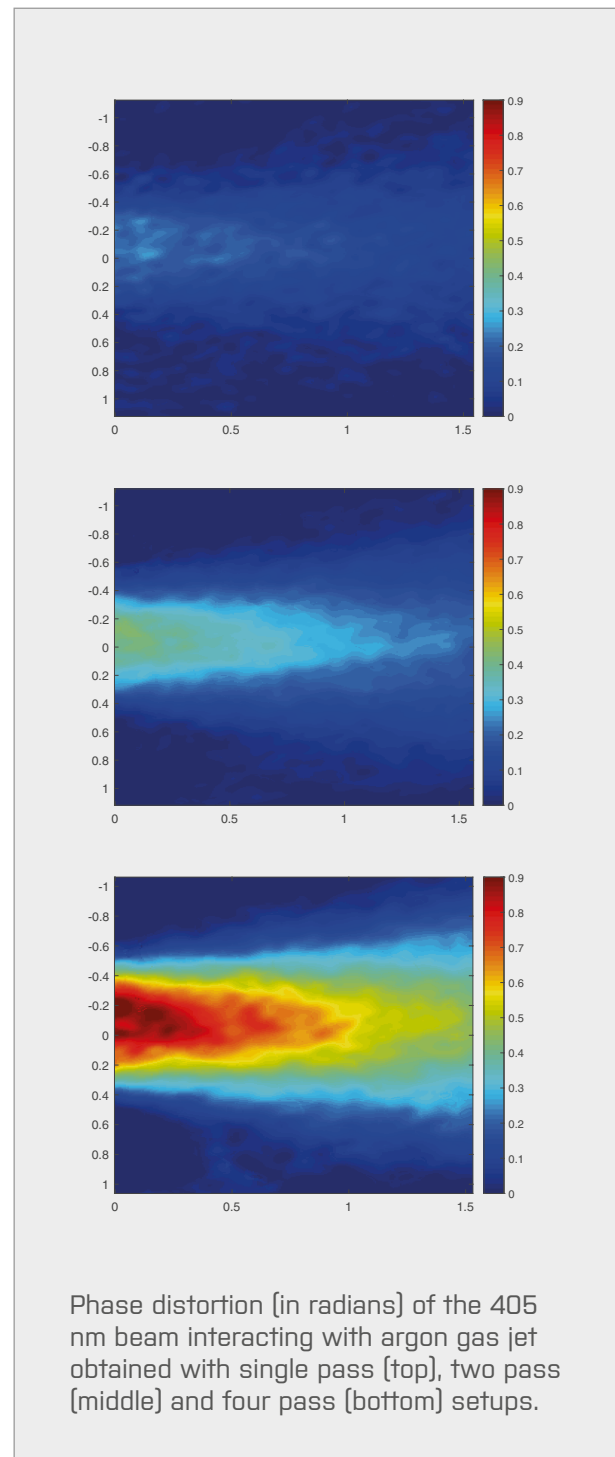
## WE OFFER

Theoretical and experimental know-how and a license to our patent.

## ABOUT US

ELI Beamlines is an international user facility that is involved in the development and operation of state-of-the-art laser systems, including some of the most powerful lasers in the world.

Our in-house development of high power lasers has led to many new and unique engineering solutions for highly demanding applications where commercial solutions satisfying our stringent requirements did not exist.



## CONTACT

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