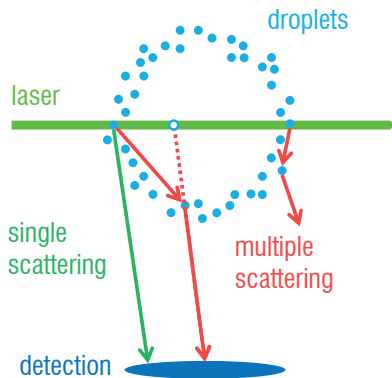


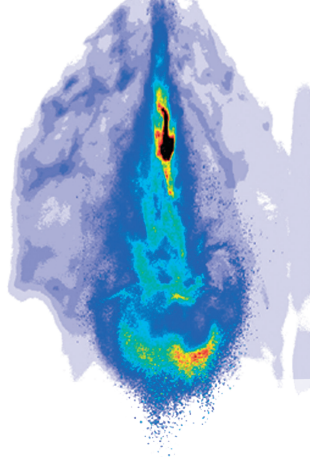
Structured Laser Illumination Planar Imaging (SLIPI)

Effective stray light rejection in dense sprays

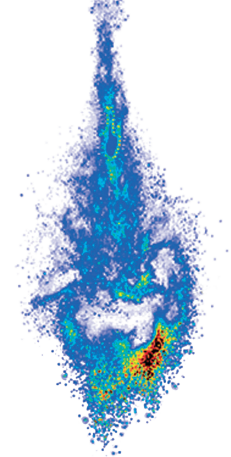


Structured Laser Illumination Planar Imaging (SLIPI) is an established technique in planar laser imaging to remove imaging artifacts arising from higher order scattering in 2-phase fluids, such as sprays. Multiple light scattering generates misleading results, especially when applied to 2-color ratiometric methods like LIF/Mie. Using **SLIPI** instead, the quality of results from planar spray imaging is drastically improved.

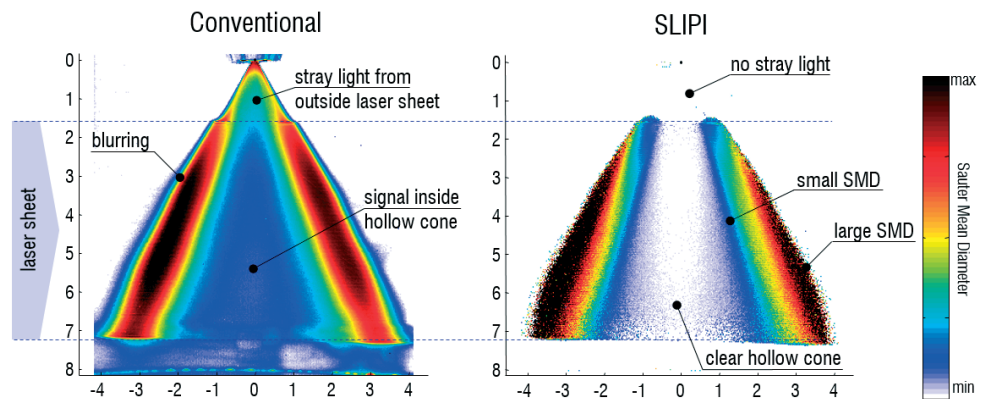
Conventional light sheet imaging



Instantaneous SLIPI spray imaging



SLIPI rejects unwanted stray light, i.e. scattered light of higher order, in dense media. When a spray is illuminated with a light sheet, not only the direct light from this plane arrives at the camera, but also a large amount is multiply scattered causing unwanted stray light in the image.



Stray light in spray imaging affects conventional LIF/Mie droplet sizing. SLIPI rejects image artefacts and delivers higher quality SMD maps.

Benefits

- ▶ Effective suppression of multiple scattering, indirect reflections and stray light
- ▶ Image contrast enhancement improving visualization of break-up and atomization processes in dense sprays
- ▶ Improved result quality for planar droplet sizing (D_{32} by LIF/Mie)
- ▶ Feasible for instantaneous and averaged imaging

courtesy of Y.N. Mishra, E. Kristensson, E. Berrocal, Lund University

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SLIPI approaches for high
temporal and
spatial resolution

Image quality enhancement
of 1p-SLIPI

SLIPI Systems

The **SLIPI** Optics Module works as an Add-on to an existing laser imaging system. It will be applied to the laser beam, at the position of the sheet optics. The output is a spatially modulated laser sheet.

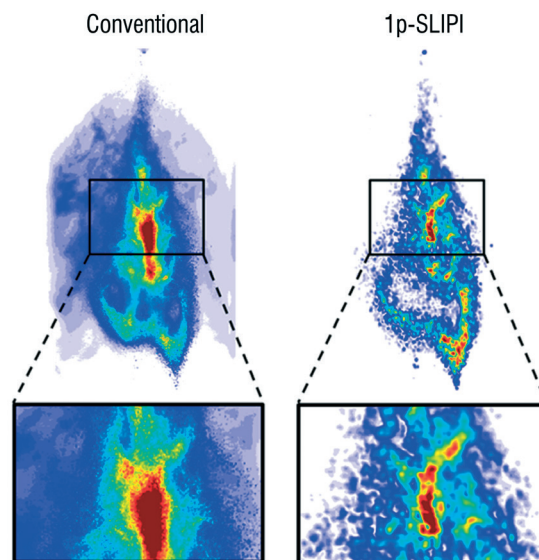
1p-**SLIPI** works with a single laser shot and a fixed pattern modulated light sheet for highest temporal resolution and a minimum of technical effort.



Instantaneous 1p-SLIPI

1p-**SLIPI** allows to capture a single spray shot instantaneously. This novel approach reveals fully time resolved spray images.

1p-**SLIPI** achieves a spatial resolution limited to the pattern size of the light sheet modulation.



Comparison of a conventional light sheet and a 1p-SLIPI image from the same spray.

Data provided by LaVision are believed to be true.
However, no responsibility is assumed for
possible inaccuracies or omissions. All data are
subject to change without notice.

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