
HASO LIFT: the super resolved Shack-Hartmann wavefront sensor

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Abstract

Shack-Hartmann (SH) sensors are known to be accurate, sensitive and fast but suffer a lack of spatial resolution. Indeed, a square of about 10x10 pixels per measured point is needed to obtain the needed accuracy and dynamic.

In the last 25 years, Imagine Optic design and manufacture SH sensors called "HASO". The LIFT has been firstly introduced by Serge Meimon from ONERA in 2014 and Imagine Optic decided to industrialize the idea. It allows winning a factor of 4 in both directions in the spatial resolution of a standard SH sensor. We can then have 64x64 true phase points on a 16x16 microlenses SH sensor.

We propose to present how this HASO LIFT is working and describe all the tests we set up to proof that the resolution is truly increased. This technology allows SH sensors to become competitors of interferometers as the LIFT does not deteriorate the accuracy or sensitivity of the sensor.

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