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Earth imaging using optical interferometry

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A new concept of imaging device has emerged during the past decade: the Segmented Planar Imaging Detector for Electro-optical Reconnaissance (SPIDER).

While with a conventional telescope the image is directly detected in the focal plane, with SPIDER, the incident wave is sampled in the pupil by a lenslet array. The wave fractions collected by each lens are then recombined in a photonic integrated circuit. The interferences obtained allow the retrieval of the image.

Technologically complex, this concept allows a drastic reduction in the size, weight and power (SWaP) of an imaging system. It also may enable the reduction of acquired data by prioritizing useful information.

The noise is one of the major limitations in imaging devices. The first part of my PhD was dedicated to noise propagation in interferometric measurements. I will present an original analytical approach to investigate the noise propagation with respect to the measurement process.

Field

Instrumentation

Day constraints

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