

# **WAVEFRONT SENSING AND ADAPTIVE OPTICS IMPLEMENTATION ON ULTRA-INTENSE LASERS**

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## **ABSTRACT**

Since 1996, Imagine Optic implements solutions for increasing beam quality on ultra-intense lasers. Based on wavefront measurements for optical path alignment or wavefront correction, in addition with deformable mirror, these solutions allow a high quality output beam to improve propagation, decrease focalized spot size or compensate dynamical effects.

The spatial phase profile of a laser beam determines the shape of the focused spot. Large optics used in high intensity laser are challenging to manufacture. Their optical aberrations alter the spatial phase of the beam. The size of the focused spot in the experiment chamber is increased which dramatically decreases the peak intensity achieved. Correction of the aberrated spatial phase profile enables to achieve the highest possible peak intensity in the focused beam.

We present results on the spatial phase correction of a laser beam adapted to the constraints of ultra high intensity lasers with a deformable mirror.

Keywords : wavefront measurement, Shack Hartmann technique, deformable mirror, closed loop control, ultra-intense and femtosecond laser