

Application of High-Speed Holographic Imaging in Laser-Matter Interactions

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The development of the new laser technologies is being driven by industrial demand for high repetition rate, high beam quality and high average/peak power. It is easy to appreciate that there have been startling developments in such laser sources in recent years. Despite these advances, industrial laser process designers still rely heavily on large parametric sweeps, while quality control relies on post-process evidence. From the industrial point of view, these advances have opened up a vast parameter space that is often overwhelming, with near infinite choice of parameters in any practical terms; this poses a problem for both laser designers and laser users. New holographic technologies for process understanding are being developed that offer a new approach to process optimisation. This talk will showcase the development of these systems and applications in areas such as Additive Manufacturing, Micro-Processing as well as exotic Laser Applications such as high-density plasma generation and target design.