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Simulating a deformable mirror with a digital micro-mirror device

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The generation of unique spatial profiles for high-power applications is becoming more topical, ranging from high-power, high bandwidth optical communication to spatial profile control in additive manufacturing and other laser-material interactions. In this presentation, we make use of a Digital Micro-mirror Device (DMD) in order to execute real-time, dynamic beam-shaping, which is capable of handling optical powers on the order of Watts. Here we outline and discuss the working principle of the DMD and compare it to other beam-shaping technologies. Ultimately, we plan to generate various spatial profiles with the use of a deformable mirror (capable of handling powers on the order of kilowatts). Here, we mimic the mechanical design of a bimorph deformable mirror on a DMD (as a proof of concept) and investigate the quality of the resulting spatial profiles.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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