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Broadband Beam Shaping Using Digital Micromirror Devices

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The appeal of beam shaping and wavefront control for coherent broadband sources has always been imbedded within the idea that the techniques and or devices implored to accomplish this, could allow one to modulate any wavelength of light using a single optical device. In recent years phase-only devices such as spatial light modulators (SLMs) have been explored to modulate and control the wavefront of broadband sources. However, the cost and calibration of these devices can be dire when compared to amplitude-only devices such as digital micromirror devices (DMDs). Since DMDs require no wavelength-dependent calibration process and are polarization independent, it Is plausible to suggest that they could be used for broadband modulation. In this work we will offer a demonstration of how this can be accomplished. We therefore offer a single cost-efficient and versatile tool for the modulation of broadband or, in theory, any desired wavelength of light which may have applications in the fields of optical communication, information processing or detection and imaging.

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

Yes

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

MSc

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