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Generating high quality spatial modes of light at a high rate

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Digital micro-mirror devices (DMDs) are composed of arrays of micro-mirrors that are able to reflect incident light in ways based on the binary operational state of each mirror. Traditionally used in digital light processing, its importance in research aspects has increased. The operational states of the mirrors make the DMD an amplitude-only light modulating device at high speeds, insensitive to polarisation states and significantly cheaper compared to traditional liquid crystal spatial light modulators. We have employed a DMD to create and switch between different modes of light at a rate of 400 Hz, and as such demonstrated arbitrary control of the amplitude and phase of light. We show a high quality in the generated beams, with correlation factors of more than 90%.

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