

Spatial light modulator generates multiple beams



Overview

In this study, we present a demonstration of the simultaneous creation of twelve vector beams using a single spatial light modulator (SLM) as a proof of concept. The device operates by encoding spatial information in frequency bins via a broadband optical phase modulator, and decoding them via a first-of-its-kind, high-resolution 2D spectrometer. Together with Hamamatsu, the Fraunhofer Institute for Laser Technology ILT in Aachen has set up an application lab for advanced laser material processing with ultrashort pulsed (USP) laser radiation. Our SLMs consist of liquid crystal (LC) pixels, each independently addressed, acting as separate variable retarders. A simple example is an overhead projector transparency.

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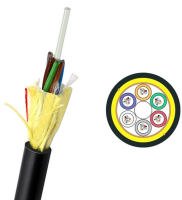
Liquid Crystal Spatial Light Modulators (LCSLM) are devices capable of spatially and temporally modulating the amplitude and phase of incident light beams, offering versatile applications ...



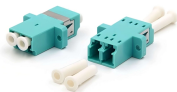
We introduce and demonstrate an optical beamformer concept based on a spatial light modulator that enables independent steering and shaping of a large number of



This dissertation illustrates how wavefront synthesis techniques using SLM combine multiple laser beams into a single high-power, high-quality beam while emphasizing that ML ...



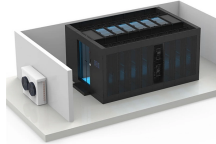
Meadowlark Optics award-winning Spatial Light Modulators (SLMs) provide precision retardance control for spatially varying phase or amplitude requirements. Our SLMs consist of liquid crystal (LC) pixels, ...



Here we introduce a new class of spatial light modulator that provides both 2D pixel geometry and high speed. The device operates by encoding spatial information in frequency bins via a broadband ...



A spatial light modulator (SLM) is a device that can control the intensity, phase, or polarization of light in a spatially varying manner. A simple example is an overhead projector transparency. Usually when ...



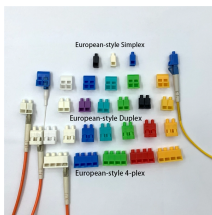
Phase masks are used to generate a parallelized beam patterns with a large number of partial beams from one incident beam. This works dynamically with spatial light modulators (SLM) or statically with ...



Spatial light modulators (SLM) are experimentally characterized to be used as reconfigurable-intelligent surfaces (RIS) for smart beam steering of multiple beams for indoor optical wireless communication ...



High throughput femtosecond laser processing is demonstrated by creating multiple beams using a spatial light modulator (SLM). The diffractive multi-beam patterns are modulated in ...



This technique facilitates the concurrent generation of several vector beams. In this study, we present a demonstration of the simultaneous creation of twelve vector beams using a ...



A spatial light modulator (SLM) is a pixellated liquid crystal device that can individually control the phase value of each pixel. It imposes spatially varying modulation onto an incident beam, allowing for the ...

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