

How to control a spatial light modulator



Summary of Content

A spatial light modulator (SLM) is used by electrically or optically controlling its pixels to modulate the phase, amplitude, or polarization of light for applications like beam shaping, holography, and adaptive optics.

Understanding the SLM

An SLM is an optical device that can control light spatially by modulating its intensity, phase, or polarization across a two-dimensional array of pixels . Each pixel can be independently addressed, allowing precise control over the optical wavefront. SLMs come in two main types:

- Reflective SLMs: Light is reflected off the device, commonly using Liquid Crystal on Silicon (LCOS) technology. The liquid crystal layer changes the phase of reflected light when voltage is applied to each pixel .
- Transmissive SLMs: Light passes through the device, and the modulation occurs as it travels through the liquid crystal layer .

Setting Up an SLM

- Choose the appropriate SLM type based on your application. Reflective LCOS SLMs are preferred for high-resolution phase control, while transmissive SLMs may be simpler for amplitude modulation .
- Integrate the SLM into your optical system. Ensure proper alignment of the incident light with the SLM surface. For phase modulation, the light should be linearly polarized along the extraordinary axis of the liquid crystal .

Article Content

(PDF) Spatial light modulators

Spatial Light Modulators (SLMs) are quasiplanar devices, allowing for the modulation of the amplitude, phase and

Mastering Spatial Light Modulators

Discover the principles, types, and applications of Spatial Light Modulators in optics, including their role in beam

Spatial light modulator

A spatial light modulator (SLM) is a device that can control the intensity, phase, or polarization of light in a spatially varying manner.

Spatial Light Modulators

We develop custom spatial light modulators with segmented micromirror arrays and a high pixel count—tailored for demanding

What is Spatial light modulator? Meaning, Examples, Use Cases, and

A spatial light modulator (SLM) is an optical device that imposes spatially varying modulation on a light beam, typically

Santec Spatial Light Modulator Solutions Guidebook

It has long been known that the spatial properties of light can be controlled using static optical elements such as lenses, mirrors, and

Spatial Light Modulator Principles

Correction is accomplished by using two spatial light modulators in series. The first performs the necessary amplitude modulation,

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SLMs function by dynamically altering the properties of light through a matrix of pixels. These pixels are controlled electrically or

spatial light modulator

A spatial light modulator that is addressed by an electrical or optical signal can be used as a controlled transparency. Logic

Contact Us

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