

Spatial Light Modulator Light Source



Summary of Content

A spatial light modulator (SLM) requires a coherent or collimated light source, typically a laser, to effectively modulate intensity, phase, or polarization for applications like holography, projection, and optical computing.

Overview of SLMs

A spatial light modulator (SLM) is a device that can control the intensity, phase, or polarization of light in a spatially varying manner, often under computer control. SLMs can be transmissive (light passes through, e.g., LCD-based) or reflective (light is reflected, e.g., LCOS or micromirror-based) and are used in applications such as holographic displays, optical computing, adaptive optics, and maskless lithography.

Light Source Requirements

The choice of light source depends on the type of SLM and the intended application:

- **Coherence:** Many SLM applications, especially holography and interferometry, require coherent light, typically from a laser, to maintain phase relationships across the modulated beam.
- **Wavelength Compatibility:** SLMs have specific operational wavelength ranges. For example, Thorlabs' Exulus LCOS SLMs operate in the 400–850 nm or 650–1100 nm ranges, and high-power SLMs can handle up to 200 W/cm².
- **Beam Quality:** A collimated and uniform beam ensures consistent modulation across the SLM surface. Micromirror-based SLMs (DMDs or MEMS) can handle higher modulation frequencies and are often used with pulsed or high-power lasers.

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Thorlabs' Exulus® Spatial Light Modulators (SLMs) employ Liquid Crystal on Silicon (LCoS) technology to

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Spatial Light Modulators

We develop custom spatial light modulators with segmented micromirror arrays and a high pixel

Spatial Light Modulators

Spatial light modulator (SLM) is a general term describing devices that are used to modulate amplitude, phase, or polarization of light

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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 (SLM) is a pixellated liquid crystal device that can individually control the phase value of each pixel. It

(PDF) Spatial light modulators

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

Spatial light modulator

The image on an optically addressed spatial light modulator, also known as a light valve, is created and changed by shining light

Spatial light modulator via optically addressed metasurface

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HOLOEYE's Spatial Light Modulator systems are based on translucent (LCD) or reflective (LCOS) liquid

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Learn about Spatial Light Modulators (SLMs), including optically addressed and electrically addressed types, their drawbacks, and a

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