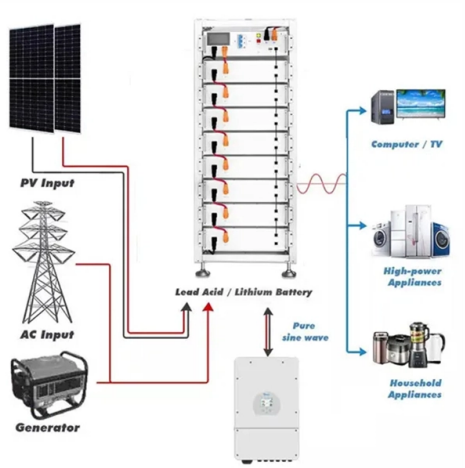
Amplitude-type liquid crystal spatial light modulator



Overview

We present an innovative electrode-free Thermo-Optically-Addressed SLM (TOA-SLM) which relies on the thermotropic properties of liquid crystals : the absorption of a writing beam modifies the local temperature, and hence the liquid crystal birefringence. A large-area liquid-crystal spatial light modulator for amplitude modulation of high-energy infrared laser beams. SPIE Organic Photonics + Electronics, 2025, Aug 2025, San Diego, United States. ⟨hal-05293745⟩ HAL is a multi-disciplinary open access archive for the. Spatial light modulators, as dynamic flat-panel optical devices, have witnessed rapid development over the past two decades, concomitant with the advancements in micro- and opto-electronic integration technology. A simple example is an overhead projector transparency. This phase control is highly stable with minimal fluctuations and minimal crosstalk with.

Article Content

A Route to Ultra-Fast Amplitude-Only Spatial Light Modulation using ...

The device, in principal, could operate as a fast, solid-state, non-volatile and energy efficient amplitude-only spatial light modulator. The device is designed with ease of fabrication in

Spatial Light Modulators

Spatial light modulator (SLM) is a general term describing devices that are used to modulate amplitude, phase, or polarization of light waves in space and time.

Spatial Light Modulators

Thorlabs'' Exulus® Spatial Light Modulators (SLMs) employ Liquid Crystal on Silicon (LCoS) technology to produce high-resolution, high-speed reflective phase

Phase characteristic of phase-only spatial light modulator under high ...

We developed a liquid-crystal spatial light modulator with high laser power capacity for industrial ultrafast pulse lasers to demonstrate innovative manufacturing and fabrication techniques

Liquid crystal spatial light modulator with very large

Unusually large phase modulation in a commercial liquid crystal spatial light modulator (LCSLM) is reported. Such a situation is obtained by illuminating with

A Large-Area Liquid-Crystal Spatial Light Modulator for Amplitude ...

High-power lasers require spatial beam shaping to operate the system at optimal performance. Amplitude modulation is crucial to compensate spatial inhomogeneiti.

A large-area liquid-crystal spatial light modulator for amplitude ...

This study aims to implement spatial amplitude modulation after the preamplifier stage, a region where the fluence and aperture requirements exceed the capabilities of conventional electro-optic liquid

All-solid-state spatial light modulator with independent

By controlling two voltage gates separately from one another, a spatial light modulator has been made that can continuously vary the phase of

Spatial light modulator

Schematic of a liquid crystal-based Spatial Light Modulator. Liquid crystals are birefringent, so applying a voltage to the cell changes the effective refractive index seen by the incident wave, and thus the

Inspection of complex amplitudes of spatial light modulators using ...

The amplitude and phase modulation modes are coupled in liquid crystal spatial light modulators and can be separated (not completely though) from each other using polarizer and analyzer.

Direct calibration of liquid crystal spatial light modulators using a ...

Spatial light modulators are pixelated devices that allow laser beams to be optically manipulated and controlled. Key parameters, such as field amplitude, can be easily modified with

Analysis of transmission jitter in amplitude-type optically addressed ...

In this study, we systematically investigate the stability characteristics and jitter suppression mechanisms of OASLMs using numerical simulations and experiments.

A review of liquid crystal spatial light modulators devices

The core technology that has advanced this field is the liquid crystal spatial light modulator (SLM), allowing high resolution tailoring of light in

Phase modulation time dynamics of the liquid-crystal spatial light ...

In this paper, liquid-crystal spatial light modulators are presented for precise dynamic manipulation of coherent light fields in space, which are used in diffractive optoelectronic and optical

Special Section Guest Editorial: Spatial Light Modulators: Devices and ...

Spatial light modulators (SLMs) are optoelectronic devices that modulate amplitude, phase, and polarization of light waves in space and in time/frequency. Well-established technologies such as

Liquid-Crystal Spatial Light Modulators and Their Applications

Liquid-crystal spatial light modulators control the optical path of light waves by modulating the refractive index. They play an important role in adaptive optics as phase-correction devices.

A review of liquid crystal spatial light modulators: devices and ...

In particular, liquid-crystal spatial light modulator (LC-SLM) technologies have been regarded as versatile tools for generating arbitrary optical fields and tailoring all degrees of freedom beyond just

Spatial Light Modulators and Their Applications in Polarization

Liquid crystal spatial light modulators (LC-SLMs) have gained substantial interest of the research fraternity due to their remarkable light modulation characteristics in mod-ern imaging applications.

LCOS Spatial Light Modulators: Trends and Applications

1.1 Introduction Spatial light modulator (SLM) is a general term describing devices that are used to modulate amplitude, phase, or polarization of light waves in space and time. Current SLM–based

Arbitrary manipulation of spatial amplitude and phase using ...

By designing simple configurations with phase-only spatial light modulators (SLMs), we show the ability to arbitrarily manipulate the spatial full field information (i.e. amplitude and phase) of

Spatial light modulator via optically addressed metasurface

A metasurface-based spatial light modulator brings the pixel size down to the submicrometre scale while demonstrating real-time complex-amplitude holography, three

An Introduction to Spatial Light Modulators

V. Conclusion Spatial light modulators are used to spatially modify an optical wavefront in two dimensions. The most commonly used models are electrooptical

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 imposes spatially varying modulation onto an incident beam, allowing for the

Liquid Crystal Spatial Light Modulators for Beam Shaping and

Abstract 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

SPATIAL LIGHT MODULATORS

Spatial Light Modulators (SLMs) are quasi-planar devices, allowing for the modulation of the amplitude, phase and polarization, or a combination of these parameters of an incident light beam according to

A Route to Ultra-Fast Amplitude-Only Spatial Light Modulation using ...

Abstract A phase-change material based, thin-film, amplitude-only spatial light modulator is presented. The modulator operates in reflection and modulates the amplitude of light incident on its

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