Experiment with Liquid Crystal Spatial Light Modulator

Overview

We present a simple and novel technique for interferometric surface measurement using a Liquid Crystal on Silicon (LCOS) Spatial Light Modulator (SLM) as phase shifter and wavefront-compensator simultaneously. Spatial light modulators, as dynamic flat-panel optical devices, have witnessed rapid development over the past two dec-ades, concomitant with the advancements in micro- and opto-electronic integration technology. Liquid crystals are birefringent, so applying a voltage to the cell changes the effective refractive index seen by the incident wave, and thus the phase retardation of the reflected wave. Researchers routinely marshal hundreds of cold atoms into individual traps using arrays of tightly focused laser beams known as optical tweezers. Thanks to an additional device. Insititute of Quantum Electronics Departement of Physics, D-PHYS ETH Zurich Supervisors: Silvan Koch Prof.

Article Content

Liquid-Crystal Spatial Light Modulators 28 and Their Applications

Introduction Liquid-crystal spatial light modulators achieve control of the light path by modula-tion of the refractive index. As an important phase-correction device, it plays an important role in adaptive

Liquid Crystal Spatial Light Modulator Development for High Power

We are developing two types of liquid-crystal spatial light modulators: an improved device by modifying each layer and a large active area for industrial infrared lasers to demonstrate innovative manufacturing.

Liquid-Crystal Spatial Light Modulators and Their Applications

By applying different electric fields to each region of the crystal layer, the arrangement direction and position of the liquid-crystal molecules can be changed. This changes their optical

Atmospheric Turbulence Simulation Experiment Based on Liquid Crystal ...

In this letter, an atmospheric turbulence simulation equipment based on a liquid crystal spatial light modulator is studied. We use fast Fourier transform to generate a phase screen, and uses the

A New Method of Generating Atmospheric Turbulence

In this work we investigate the use of a binary amplitude spatial light modulator, the digital micromirror device (DMD) [21, 25], as a method of

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Hier sollte eine Beschreibung angezeigt werden, diese Seite lässt dies jedoch nicht zu.

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: Liquid-crystal SLMs benefit

The versatility of liquid-crystal spatial light modulators have made them an important tool for research aimed at emulation of atmospheric

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 inhomogeneities and to mask parts of the

Liquid-Crystal Spatial Light Modulators and Their Applications

The experimental results show that, after the distortion wavefront is corrected by the dual liquid crystal spatial light modulator, the average gray value of the 10 × 10 pixels in the center of ...

Atmospheric Turbulence Generator Using a Liquid Crystal Spatial Light ...

We have developed a testbed that simulates atmospheric aberrations using a Liquid Crystal Spatial Light Modulator and the speed in which they vary may be controlled. This system

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

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

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

Liquid Crystal Spatial Light Modulator with Optimized

In this paper, we present experimental results for multiorder diffractive lenses implemented in a parallel-aligned LCoS from Holoeye that

Phase shifting Interferometry and Wavefront Compensation using

We present a simple and novel technique for interferometric surface measurement using a Liquid Crystal on Silicon (LCOS) Spatial Light Modulator (SLM) as phase shifter and wavefront

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

In this review, we provide our perspective on this field by reviewing the working principles of liquid crystal, diffraction optics, the recent progress of LC-SLMs, and their role in mod-ern...

Deep Horizontal Atmospheric Turbulence Modeling and Simulation

Light Modulator (SLM) is being used to generate atmospheric turbulence in the laboratory on a laser beam. Using a LC SLM in combination with software that generates atmospheric turb.

Atmospheric Turbulence Simulation Experiment Based on Liquid Crystal ...

Request PDF | On Oct 15, 2021, Zheqi Liu and others published Atmospheric Turbulence Simulation Experiment Based on Liquid Crystal Spatial Light Modulator | Find, read and cite all the research ...

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

The core technology that has advanced this field is the liquid crystal spatial light modulator (SLM), allowing high resolution tailoring of light in amplitude, phase, polarization, or even more exotic

Atmospheric turbulence simulation using liquid crystal spatial light ...

Download Citation | Atmospheric turbulence simulation using liquid crystal spatial light modulators | Laser systems are finding a home in many military applications - such as Space

Electronically adressed ferroelectric liquid crystal over silicon ...

The Spatial Light Modulator (SLM) is a key component for many optical computing systems. Historically, weak SLM performance has been a limiting factor for some systems. The SLM technology of

LCOS Spatial Light Modulator working principle

In this video we explain the basic principle of an LCOS phase only Spatial Light Modulator. The desired optical functionality of a phase modulator is enabled by the electrical and optical ...

A review of liquid crystal spatial light modulators:

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A New Method of Generating Atmospheric Turbulence with a Liquid Crystal ...

lity and flexibility can be achieved using a Liquid Crystal (LC) Spatial Light Modulator (SLM). This system allows the simulation of atmospheric seeing conditions ranging from very

EXULUS Spatial Light Modulators – Principles and Applications

An introduction to liquid-crystal-based spatial light modulators (SLMs), including basic SLM principles, structures, and applications, is presented. Learn how to perform some basic tasks and how ...

Electrically Reconfigurable Terahertz Metasurface Composed of a Liquid ...

The LCE meta-atoms exhibit excellent stability and repeatability, overcoming limitations of previous terahertz MEMS metasurfaces. This platform holds significant promise for next

45-2: Invited Paper: Liquid crystal spatial light modulator for ...

The conditions of soliton formation in a liquid crystal (LC) layer for generation of a pair of photons in an entangled quantum state (biphotons) during quantum calculations are considered. The geometrical

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

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

Extending Spatial Light Modulation into the Ultraviolet

Thanks to an additional device called a liquid-crystal-on-silicon spatial light modulator (LCOS-SLM), any and all of the atoms can be moved

Experimental generation of non-Kolmogorov Turbulence using a

ABSTRACT Several experiments showed that the classical Kolmogorov power spectral density of the refractive-index sometimes does not properly describe the statistics of the atmosphere. In this paper

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