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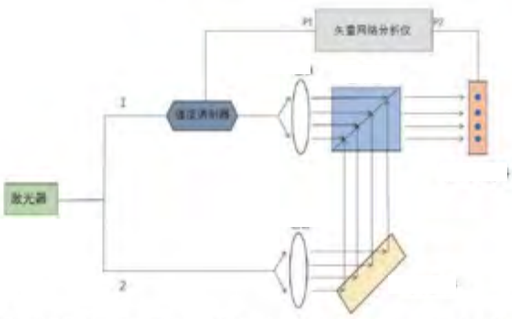
Multibeam Generation and Control

Our FSLM-2K55-P04 phase-type spatial light modulator can be used for the study of microwave optical multi-beam generation based on spatial light modulator.

Experimental principle

In the experiment, the light from the laser is divided into two ways through a 50:50 optical coupler, one way through the vector network analyzer P1 port can output a certain frequency RF signal into the intensity modulator, after electro-optical modulation is loaded onto the optical carrier, the modulated light at the end of the fiber through the self-focusing lens of the collimator into parallel spatial light and then shot into the combiner, in the other way, the local vibration light after collimation, the light is injected into the reflective spatial light modulator, and after the phase modulator, it is injected into the beam combiner, and the light of the two paths is combined and then detected by the photodetector and demodulated into an electrical signal.



Experimental flow chart of microwave optical beam generation based on SLM

(a) (b)

Comparison of the phase of light modulated by SLM before and after (a) before modulation (b) after modulation

Application direction

A beam generation and its control scheme based on electro-optical modulator and liquid crystal spatial light modulator is proposed. The innovation of this scheme is that the phase of light is modulated in space, and the phase change of light is realized by controlling the phase modulation unit of liquid crystal spatial light modulator in the way of loading gray map, which has the advantage of good tunability compared with traditional devices such as phase shifter. Under the condition of having relevant experimental instruments and equipment, high frequency microwave signal modulation can be performed, and a gray map with the phase change in both horizontal and vertical
directions of the pixel can be generated on a computer and used to realize two-dimensional beam deflection.