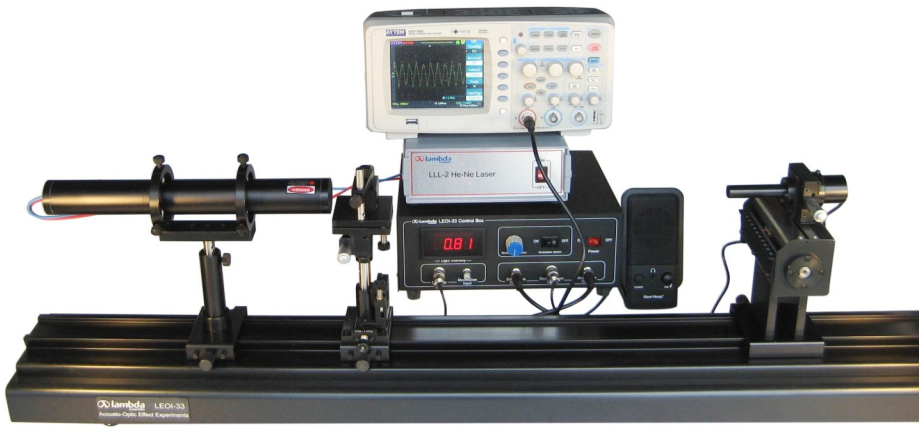
Construct, Conduct & Comprehend Physics Experiments

LEOI-33 Experimental System for Crystal Acousto-Optic Effect



Note: oscilloscope not included

- *Easy operation*
- *Precise measurement*
- *Stable base*
- *Complete solution*

Acousto-optic effect is based on the change in the refractive index of a medium due to the presence of sound waves in the medium. This creates a refractive index grating in the material that can be used to diffract light. It provides a powerful means to the control of the frequency, direction, and intensity of a laser beam. Employing acousto-optic effect, acousto-optic devices such as acousto-optic modulator, acousto-optic deflector, and tunable acousto-optic filter have been applied significantly to areas such as laser technology, optical signal processing, and integrated optical communication.

Experimental Contents

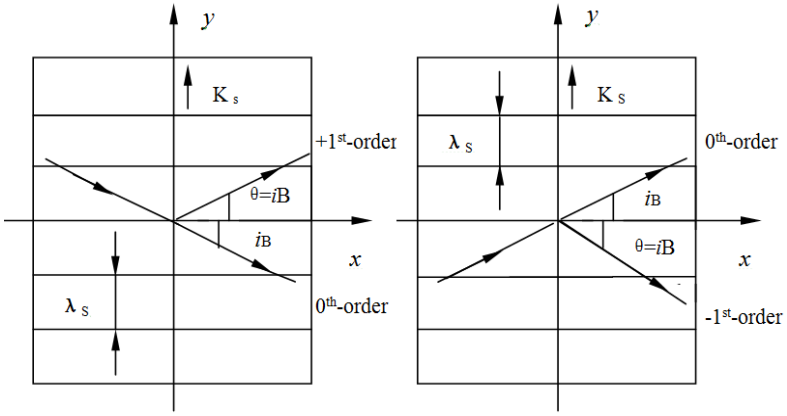
1. Observe Bragg diffraction and measure Bragg diffraction angle
2. Display acousto-optic modulation waveform
3. Observe acousto-optic deflection phenomenon
4. Measure acousto-optic modulation amplitude
5. Measure parameters such as acousto-optic diffraction efficiency and bandwidth
6. Measure the traveling velocity of ultrasound waves in a medium
7. Simulate optical communication using acousto-optic modulation technique

Parts & Specifications

He-Ne laser with power supply	1.5 mW@ 632.8 nm	1 set
Acousto-optic modulator		1
Main control unit		1
Optical rail	1 m	1
Universal carrier	For mounting laser tube holder	1
X- adjustable carrier	For mounting A-O holder	1
2-D Acousto-optic modulator holder		1
Laser tube holder		1
Lateral measurement unit with detector	Precision=0.01 mm	1
Cables		4
Speaker with AC adapter		1 set
Manual		1

Specifications of Acusto-Optic Device

Velocity of Sound (m/s)	363.2
Wavelength of Light (nm)	632.8
Center Frequency (MHz)	100
Effective Aperture (mm)	1
Transmissivity (%)	96
Bragg Angle (mrad)	17.4
Input Impedance (ohm)	50
Polarization of Input Light	Any



Schematic of Bragg diffraction

Note: above product information is subject to change without notice.

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