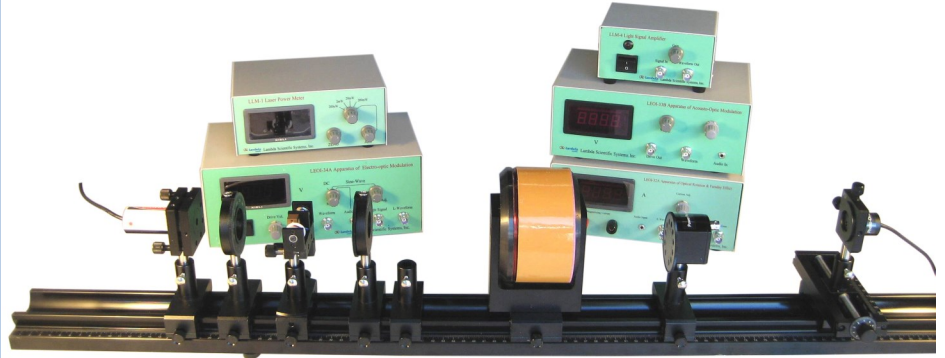


LEOI-35C Comprehensive Light Modulation for Acousto/Electro/Magneto-Optic Effects



- Complete coverage of acousto-optic, electro-optic, and magneto-optic effects
- Cost effective solution with components shared among experiments
- Ample experimental content
- Detailed instruction manual

This apparatus is a combination of experimental systems of acousto-optic, electro-optic, and magneto-optic effects. It covers all the experimental contents given in LEOI-32A, LEOI-33B and LEOI-34A.

Experiments of magneto-optic effect:

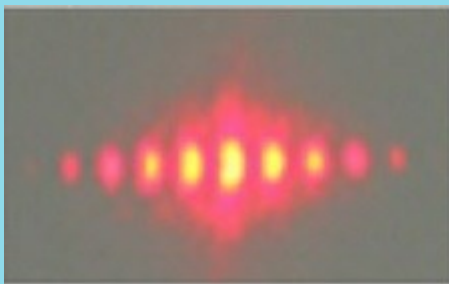
1. Observe phenomenon of polarization rotation by magnetic field
2. Measure magnetization current vs polarization rotation angle
3. Observed current direction to rotatory direction and compare with other optical rotation phenomena
4. Calculate the Verdet constant of the material
5. Simulate optical communication via magneto-optic modulation
6. Verify Malus's law

Experiments of acousto-optic effect:

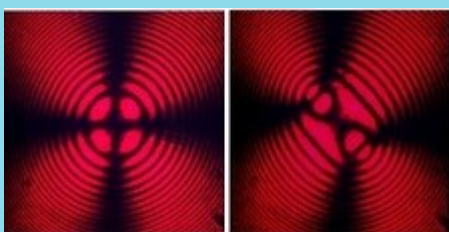
1. Observe diffraction of light in ultrasonic standing wave field
2. Observe image of ultrasonic standing wave field and measure propagation speed of sound wave
3. Measure diffraction intensity of light by ultrasonic standing wave and calculate diffraction efficiency
4. Measure diffraction intensity peak locations and calculate grating constant
5. Simulate optical communication using acousto-optic modulation

Experiments of electro-optic effect:

1. Study optical axis characteristics of LiNbO₃ crystal in absence and presence of driving voltage
2. Observe electro-optic modulation phenomenon
3. Measure half-wave voltage of electro-optic crystal
4. Calculate electro-optic coefficient
5. Demonstrate optical communication via electro-optic modulation



Diffraction pattern of A-O device



Interference patterns of polarized light

Parts & Specifications

| Description | Specifications | Qty |
|--------------------------------|---|-----|
| Optical bench | Length: 1.2 m | 1 |
| Diode laser | 4 mW at 650 nm with 2-D adjustable holder | 1 |
| Laser power meter (LLM-1) | 3-1/2 digits | 1 |
| | Scale: 200 μ W, 2 mW, 20 mW, 200 mW | |
| | Resolution: 0.1 μ W | |
| Power meter probe | Hole apertures: 0.5, 1, 2, 3, 4, 6 mm | 1 |
| | Slit widths: 0.2, 0.3, 0.4, 0.8, 1.2 mm | |
| Large 1-D translation stage | Range: 90 mm; resolution: 0.01 mm | 1 |
| AO device | Central frequency: 10 MHz with 2-D adjustable holder | 1 |
| AO main unit | Frequency range: 9~11 MHz adjustable | 1 |
| MO main unit | 0~3 A adjustable, for magneto-optic coil | 1 |
| MO coil | Length: 50 mm; number of turns: 1600 | 1 |
| MO sample | Φ 6 mm, length 30 mm | 1 |
| Teslometer with probe | Range: 0 ~ 2000 mT | 1 |
| EO main unit | Vmax \geq 1600 V with built-in speaker | 1 |
| LiNbO ₃ crystal | Clear aperture: 5 mm \times 5 mm with 3-D adjustable holder | 1 |
| Light signal amplifier (LLM-4) | for AO optical communication experiment with built-in speaker | 1 |
| Polarizer | Clear aperture: 27 mm | 2 |
| Photo triode detector | Incl 2-D adjustable holder, \pm 2.5 mm | 1 |
| Photo diode detector | Incl 2-D adjustable holder, \pm 2.5 mm | 1 |
| Pin-hole | Φ 2.5 mm | 1 |
| White screen | 100 mm \times 80 mm | 1 |
| Lens | f =100 mm; Φ 38 mm | 1 |
| Beam expander lens | Incl 2-D adjustable holder, 40 X | 1 |
| $\lambda/4$ wave plate | Clear aperture: 27 mm | 1 |
| 1-D adjustable slider | Range: 10 mm | 1 |
| Audio source | iPod nano | 1 |
| Slider | | 5 |
| Cable | BNC cables (4), red/black cable (1/1), and audio cable (1) | 7 |
| Power cord | | 4 |
| Instruction manual | | 1 |

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