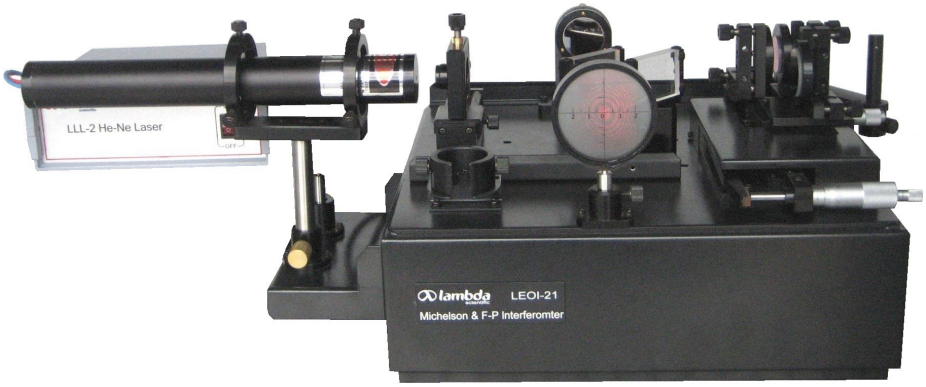
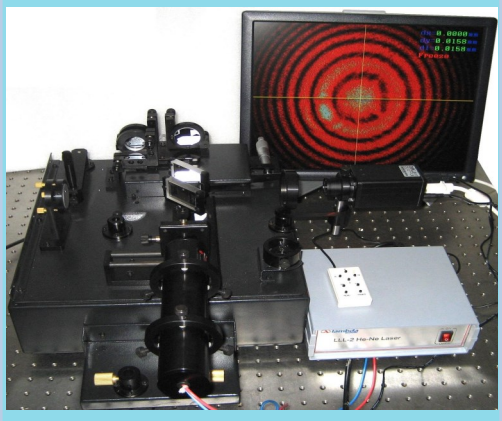
Construct, Conduct & Comprehend Physics Experiments

LEOI-21 Universal Interferometer of Michelson and Fabry-Perot

- *Two Interferometer Modes*
- *Rigid and Precise*
- *Complete Solution*
- *He-Ne Laser, Sodium-Tungsten Lamp, and Air Chamber Included*
- *Optional VGA Video Camera for Fringe Image Display and Projection*





Fringe image acquired by color camera

This equipment combines the historically important Michelson interferometer and the high resolution Fabry-Perot interferometer in one rigid and compact structure. Michelson interferometer is still an important instrument in today's physics laboratories and is used for observing two-beam interference phenomena. Fabry-Perot interferometer is for observing multiple-beam interference and measuring the fine structure of spectrum. Measurements are precise in two modes of operation. Switching between the two modes of operation and aligning components are relatively simple. This instrument is suitable for physics teaching at universities and colleges. Using an optional color camera, interference fringes can be acquired to a VGA display or a projector for real-time lecture demonstration.

Experimental Contents

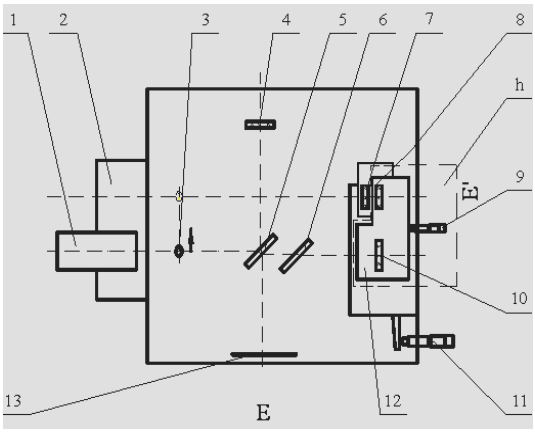
1. Two-beam Interference observation
2. Equal-inclination fringe observation
3. Equal-thickness fringe observation
4. White-light fringe observation
5. Wavelength measurement of the Sodium D-lines
6. Wavelength separation measurement of the Sodium D-lines
7. Measurement of the refractive index of air
8. Multi-beam interference observation
9. Measurement of the He-Ne laser wavelength
10. Interference fringe observation of the Sodium D-lines
11. Interference fringe acquisition by color camera for VGA display or projector (optional)

Specifications

Flatness of Beam Splitter & Compensator Plate	0.05 λ
Minimum Travel Reading	0.00025 mm
Coarse Travel of Mirror 1	10 mm
Fine Travel of Mirror 2	0.25 mm
Fabry-Perot Mirrors	30 mm (dia), R=95%
Wavelength Measurement Accuracy	Relative error: 2% for 100 fringes
Sodium-Tungsten Lamp	Sodium: 20 W; Tungsten: 35 W (Adjustable)
He-Ne Laser Output	0.7 ~ 1 mW at 632.8 nm
Air Chamber with Gauge	Chamber length: 80 mm; Pressure range: 0-40 kPa
Overall Dimension	500×350×245 mm
Weight	Approx. 15 kg
Camera with VGA port (Option 1)	Detailed specs posted on website

Part List

	Description	Qty
1	Main interferometer	1
2	Ground glass screen	1
3	Alignment aperture	1
4	Extension arm	1
5	He-Ne laser	1
6	Laser holder	1
7	Sodium-Tungsten lamp	1
8	Air chamber and pump with gauge	1
9	Hand tally counter	1
10	CMOS camera (optional)	1
11	Power cord	2



1. He-Ne laser
2. Side stage
3. Beam expander
4. Fixed mirror
5. Beam splitter
6. Compensator
7. FP fixed mirror
8. FP movable mirror
9. Coarse micrometer
10. Movable mirror
11. Fine micrometer
12. Movable stage
13. Ground glass screen

Schematic of system

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