

## LEAI-22 Integrated Experimental System of Faraday and Zeeman Effects



This LEAI-22 experimental system of Faraday and Zeeman effects consists of a main machine unit (including Tesla meter, light source power supply, etc.), an electromagnet with a rotation stage, a He-Ne laser with power supply, a pencil Mercury lamp, focusing/imaging lenses, an interference optical filter, a F-P etalon, a polarizer, a photodetector, a direct reading microscope with optional CCD camera, USB image acquisition box, and analysis software. It is an ideal experimental instrument to conduct the following experiments:

- *Integrated system for both Faraday and Zeeman effects*
- *Transverse & longitudinal Zeeman effects*
- *High accuracy Tesla meter included*
- *Optional CCD camera with analysis software for Windows 7, 32/64-bit computers*

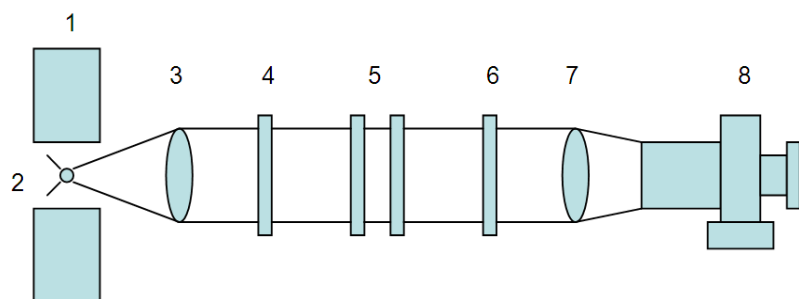
1. Observe Zeeman effect, and understand atomic magnetic moment and spatial quantization.
2. Observe the splitting and the polarization of a Mercury atomic spectral line at 546.1 nm.
3. Calculate electron charge-mass ratio based on Zeeman splitting amount.
4. Learn how to adjust a Fabry-Perot etalon and apply a CCD device in spectroscopy.
5. Measure magnetic field intensity using a Tesla meter, and determine magnetic field distribution.
6. Observe Faraday effect, and measure Verdet constant using light extinction method.

## Specifications

Electromagnet	$B < 1400$ mT; pole spacing: 8 mm; pole dia: 30 mm; axial aperture: 3 mm
Power supply	5 A/30 V (max)
He-Ne laser	1.5 mW@632.8 nm; linearly polarized
Etalon	dia: 40 mm; $L$ (air)= 2 mm; passband:>100 nm; $R$ : 95%; flatness:< $\lambda/30$
Teslameter	range: 0-1999 mT; resolution: 1 mT
Pencil mercury lamp	emitter diameter: 6.5 mm; power: 3 W
Interference optical filter	CWL: 546.1 nm; half passband: 8 nm; aperture: 19 mm
Direct reading microscope	magnification: 20 X; range: 8 mm; resolution: 0.01 mm
Lenses	collimating: dia 34 mm; imaging: dia 30 mm, $f=157$ mm

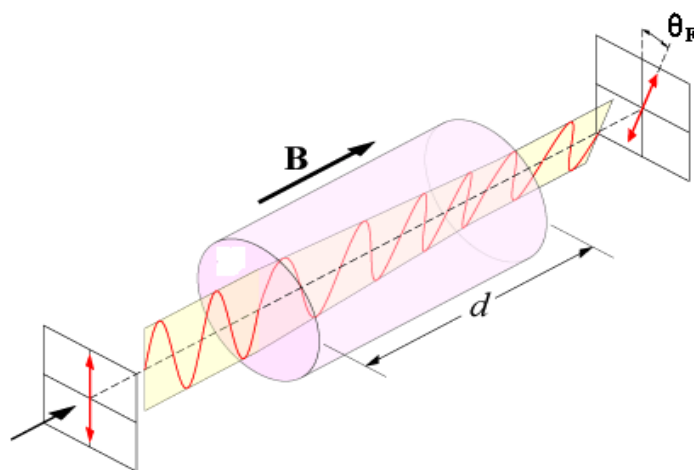
## Part List

Main Machine Unit	1
He-Ne Laser with Support	1
Sample & Stage	1
Pencil Mercury Lamp	1
Mercury Lamp Adjustment Arm	1
Milli-Teslameter Probe	1
Mechanical Rail	1
Carrier Slide	6
Power Supply of Electromagnet	1
Electromagnet w/ 90° stage	1
Condensing Lens	1
Interference Filter	1
F-P Etalon with support	1
Polarizer with Scale Disk	1
Imaging Lens	1
Direct Reading Microscope	1
Power Cord	1
Instruction Manual	1
Optional CCD, USB & Software	1 set



1. Electromagnet, 2. Mercury lamp, 3. Condensing Lens, 4. Filter  
5. F-P etalon, 6. Polarizer, 7. Imaging Lens, 8. Microscope (or CCD)

Schematic of Zeeman effect experimental setup



Schematic of Faraday effect

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