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IV-E639 Zeeman Effect Experimental Setup

- The Zeeman effect is the splitting of spectral lines of atoms when they are placed in a magnetic field. It exhibits space quantization and is one of the few fundamental atomic physics experiments which can be performed in a teaching laboratory.

Description Of The Experimental Set-Up:

- Experimental Set-up for Zeeman Experiment
- The set-up consists of the following:

Apparatus Supply:

1. High Resolution Fabry Perot Etalon
2. Mercury Discharge Tube (Low Pressure Mercury Discharge Tube)
3. Power Supply (High Voltage Power Supply for Discharge Tube)
4. Narrow Band Interference Filter
 - Central Wave Length: 546nm
 - Tmax: 74%
 - HBW: 8nm
5. Polarizer with lens
6. Optical Bench
7. CCD Camera: (High Resolution CCD Camera)
8. Telescope with Focussing Lens
9. Monitor 14" TV-14
10. Electromagnet, (Specifications as per datasheet)
11. Constant Current Power Supply
12. Digital Gauss Meter

Result:

- The interference pattern is in the form of circular rings. These are split when the magnetic field is switched on. The amount of splitting depends on the external magnetic field, charge to mass ratio of electron and Lande's g-factors of the electronic energy levels involved in the transition. These later quantities can be obtained from this experiment.
- The result of this unit are within 5% of the standard value.

