

LEAI-19 Apparatus of Optical Pumping

- *Open structure for hands-on learning*
- *High accuracy for g-factor measurement*
- *Robust system*
- *Affordable*

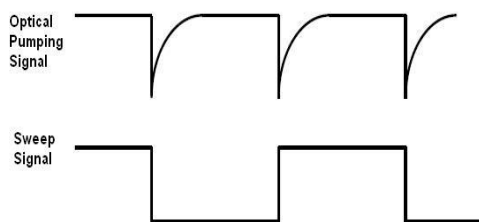


Optical pumping is an important experiment in modern physics. It reveals many important physics concepts such as atomic energy states and atomic transitions in atomic physics, optics, electromagnetism, and electronics. This technique has a wide range of applications in fundamental physics research, accurate measurement of magnetic field, as well as atomic frequency standards.

To promote hands-on learning, this apparatus is designed with an open structure. Discrete components such as rubidium spectral lamp, absorbing cell, photodetector, and other optical components can be easily installed and aligned. A light-proof cloth cover is provided to cover the apparatus to minimize the impact of ambient light on the system.

Using this unit, the following experiments can be conducted:

1. Observe optical pumping signal
2. Measure g -factor
3. Measure earth magnetic field (horizontal & vertical)

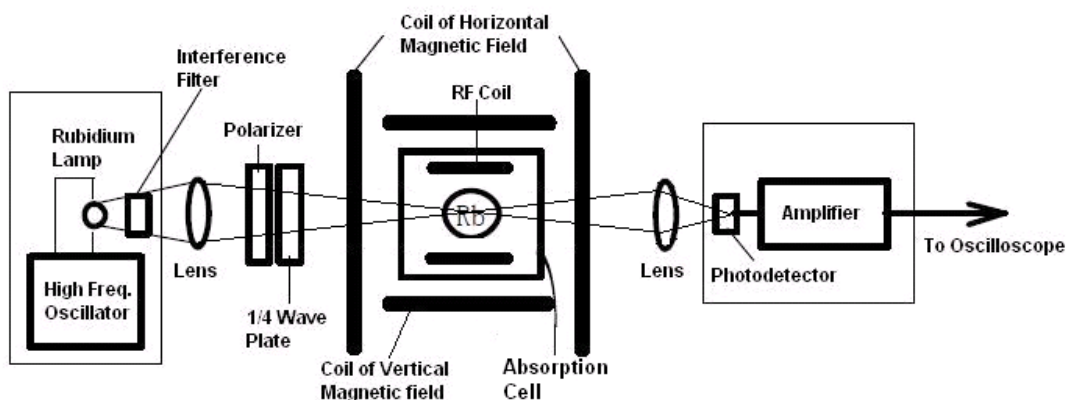


Specifications

Horizontal DC magnetic field	0 ~ 0.2 mT, adjustable, stability $< 5 \times 10^{-3}$
Horizontal modulation magnetic field	0 ~ 0.15 mT (P-P), square wave 10 Hz, triangle wave 20 Hz
Vertical DC magnetic field	0 ~ 0.07 mT, adjustable, stability $< 5 \times 10^{-3}$
Photodetector	gain > 100
Rubidium lamp	lifetime > 10000 hours
High frequency oscillator	55 MHz ~ 65 MHz
Temperature control	~ 90 °C
Interference filter	central wavelength 795 ± 5 nm
Quarter wave plate	working wavelength 794.8 nm
Polarizer	working wavelength 794.8 nm
Rubidium absorption cell	diameter 52 mm, temperature control 55 °C

Part List

Main Machine Unit	1
Power Supply	1
Auxiliary Source	1
Wires and Cables	5
Compass	1
Light Proof Cover	1
Wrench	1
Alignment Plate	1



Schematic of apparatus

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