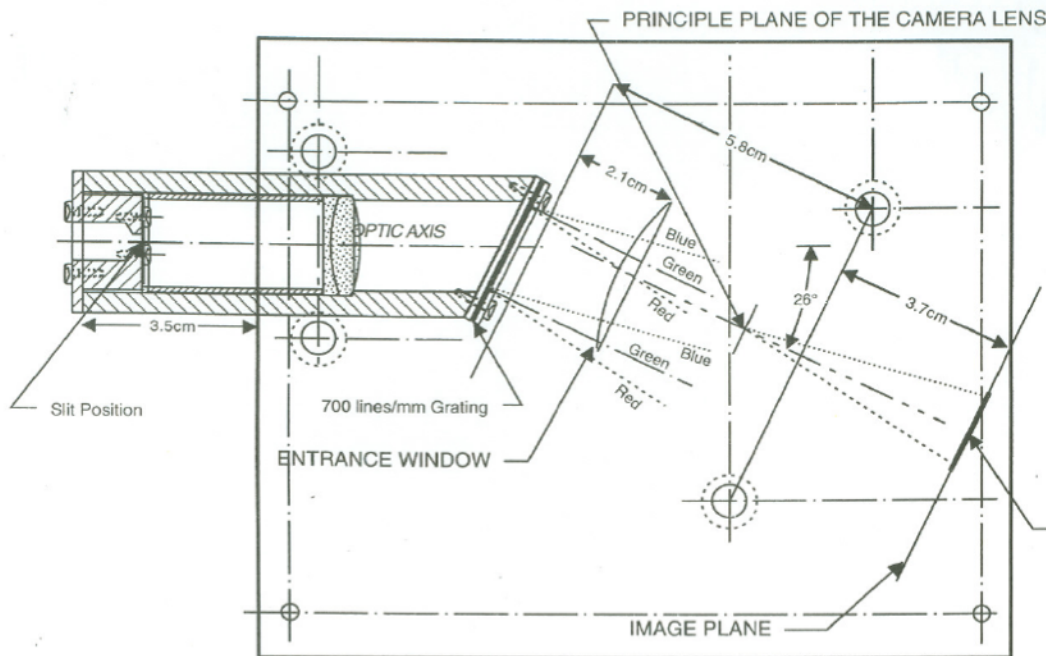
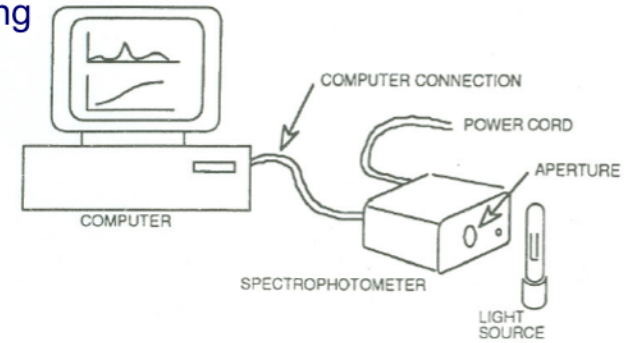


E0-85 Spectrophotometer

- Obtain a Spectrum of a Hg and Na light source with a grating spectrophotometer and linear diode array.
- Obtain a spectrum of an incandescent light bulb filament.
- Plot the spectra. Excel plots or other. Label spectral lines in nanometer.

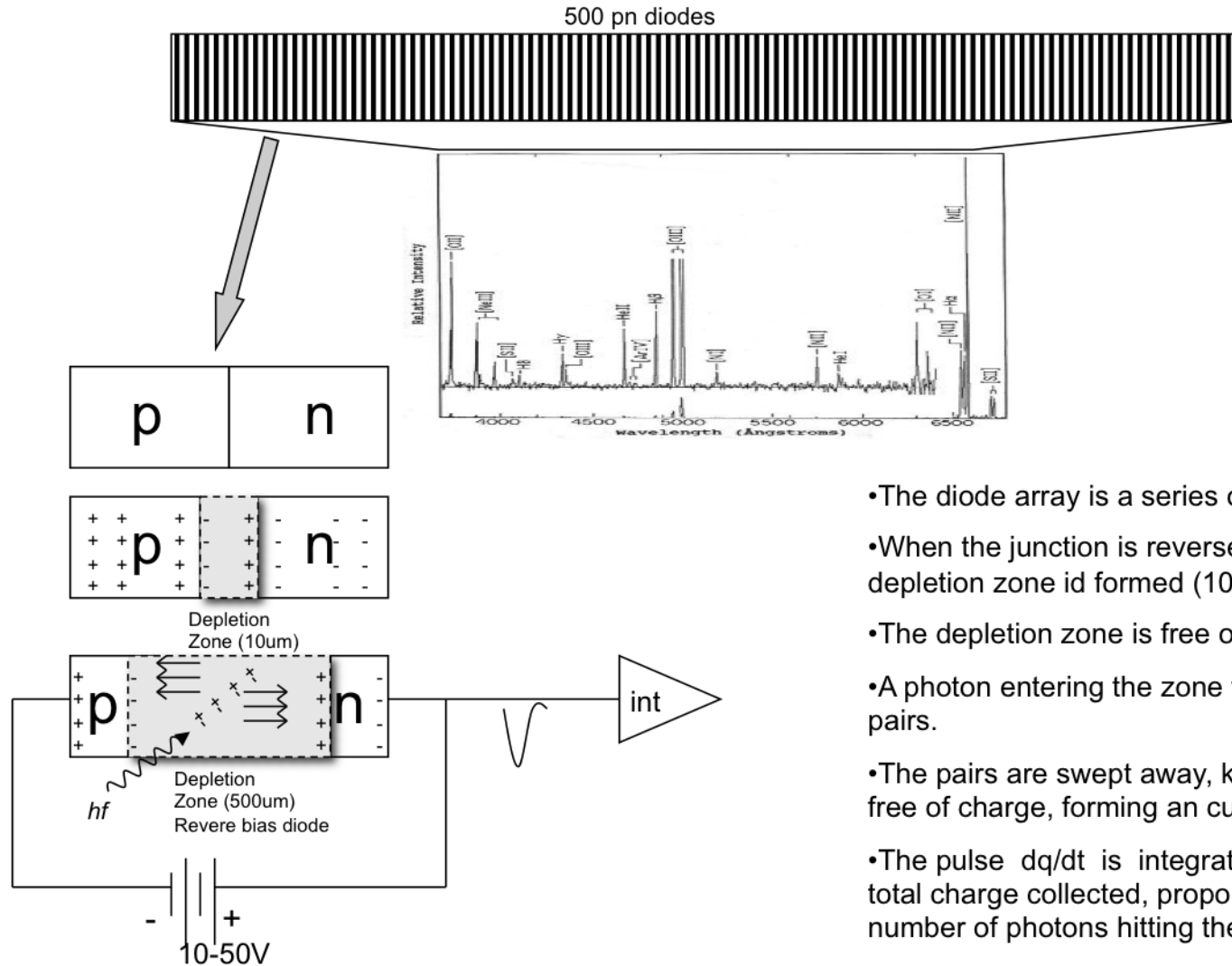


The apertures of the collimator and telescope are f/2.8.
The slit is electroformed nickel and is 25micrometers wide.

OPTICAL LAYOUT OF E0-85 COMPUTER CONTROLLED SPECTROPHOTOMETER

- 1) Explain how an optical grating works.
- 2) List the prominent spectral lines in the Hg and Na spectra.
- 3) Determine the energy ΔE splitting of the Hg doublet.
- 4) Use the Wein Dsiplacement Law to determine the temperature of the lamp filament.
- 5) What is the filament made of?

Linear Diode Array (PIN diode)



- The diode array is a series of PN junctions.
- When the junction is reverse biased a depletion zone is formed (100-500um).
- The depletion zone is free of charge carriers.
- A photon entering the zone will release ion pairs.
- The pairs are swept away, keeping the zone free of charge, forming an current pulse .
- The pulse dq/dt is integrated to give the total charge collected, proportional to the number of photons hitting the diode.

Flame Spectra

