Date: **Reg. No.**

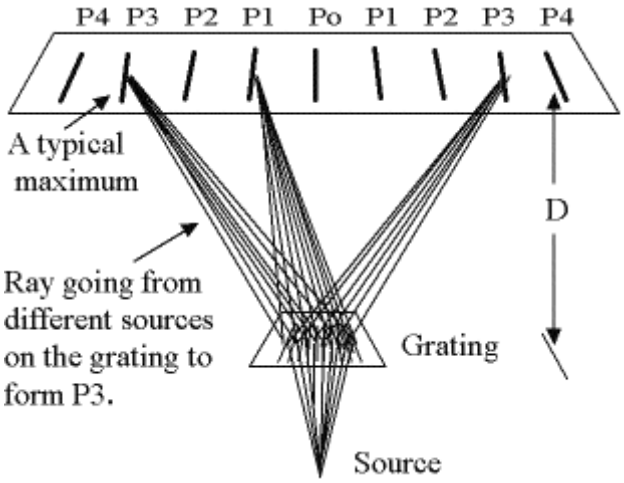
MONOCHROMATORS IN SOPHISTICATED INSTRUMENT

Apparatus Available:

- Laser Source
- Grating
- Scale with measurements

SLO:

- ✓ To determine the wavelength of the given laser source using transmission diffraction grating method



D = the distance from the grating to the screen.

d = the spacing between every two lines (same thing as every two sources)

If there are (N) lines per mm of the grating, then (d), the space between every two adjacent lines or (every two adjacent sources) is

$$d = \frac{1}{N}$$

The diffraction grating formula for the principal maxima is: $d \sin\theta = n \lambda$

where n is the order of diffraction (= 1, 2, 3, ...) and θ angle of diffraction.

$$\lambda = \frac{\sin\theta}{Nn} \text{ (meter)}$$

Observation:

Number of lines per meter on the grating is_____

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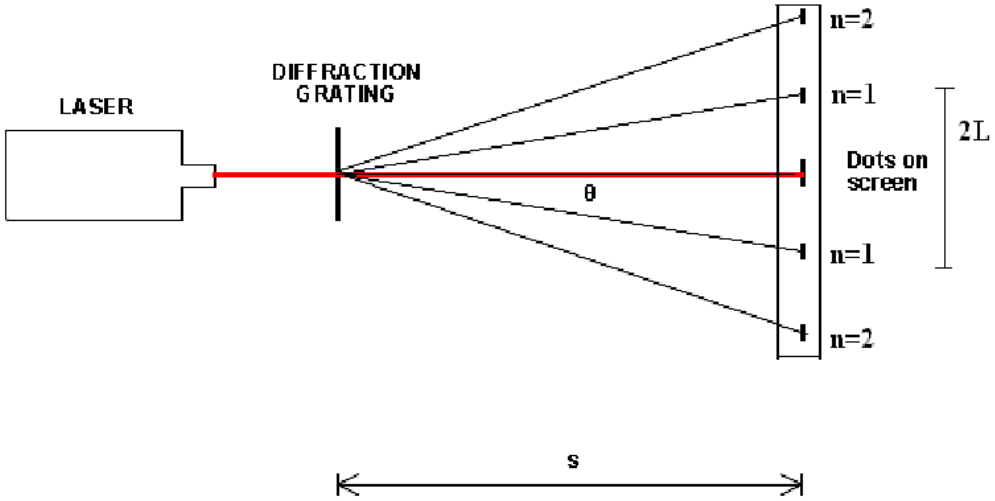

Fig 2. Experimental Setup

Tabular Column:

n	S (cm)	2L (cm)	L (cm)	$\tan\theta=L/S$	$\theta=\tan^{-1}(L/S)$	$\sin\theta$	Mean	λ (nm)
1	25							
	30							
	35							
2	25							
	30							
	35							
3	25							
	30							
	35							

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Calculation:

Result:

The wavelength of the laser source is found to be _____ (nm)

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