

Experiment 1.2

Visit <https://alasso.tech/>

Student Name: Alasso

UID:

Date of performance:

Branch:

Section/Group:

Subject name: Physics

AIM OF THE EXPERIMENT–To determine the diffraction using laserbeam and find the grating element of diffraction grating.

APPARATUS-

S.No.	Equipment	Range	Quantity
1.	Power supply/Operating voltage	5mV/3-12V	1
2.	Laser	400 – 700nm	1
3.	Grating element	250 - 500 lines per mm.	1
4.	Stand	NA	2



OBSERVATIONS-

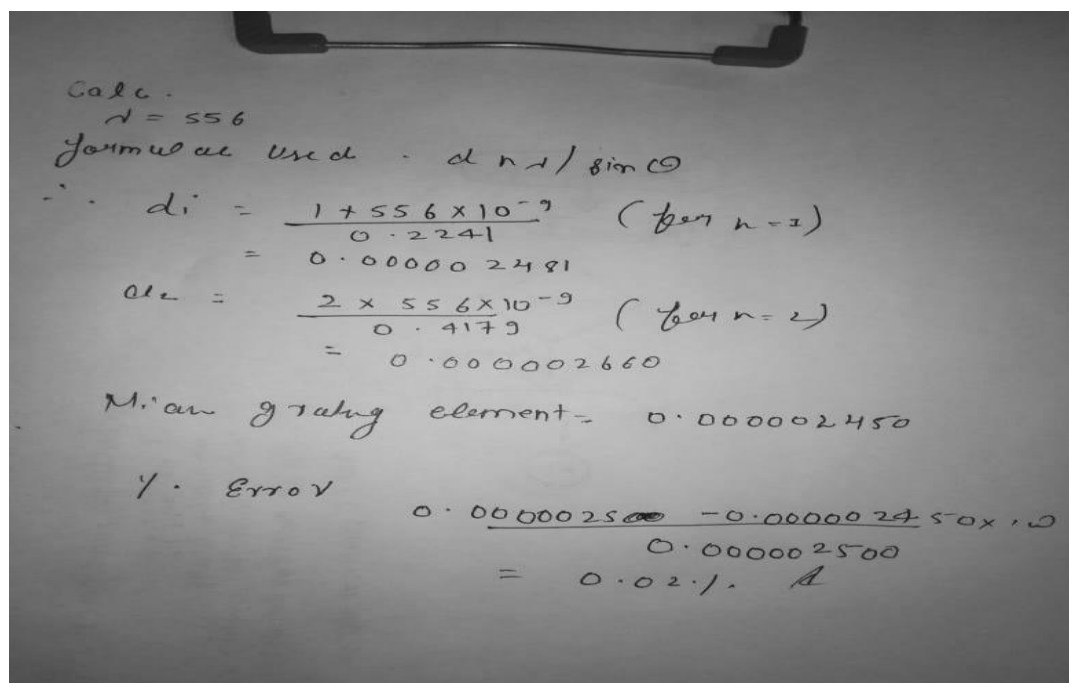
- i. Wavelength of Diode laser, $\lambda = 445$
- ii. Distance between diffraction grating and screen, $D = 10\text{m}$
- iii. Standard Grating Element (d) = $1\text{mm}/400 = 0.0000025\text{ m}$



S.NO.	Order of Diffraction(n)	Position of nth order maxima(m)	Mean distance of nth order maxima	Distance between Grating and screen(D)(m)	Sin theta	d = in (m)
1.	1	OP _{left} = 2.3 OP _{right} = 2.3	2.3	10	0.2441	0.00000281
2.	2	OP _{left} = 4.6 OP _{right} = 4.6	4.6	10	0.4117	0.000002660

Mean Grating Element = 0.000002565

OBSERVATIONS: -





RESULT AND DISCUSSION: -

Grating Element, $d = 0.000002565$

SOURCES OF ERROR: -

1. Laser light should not fall on eyes of observer directly.
2. All lengths should be measured in same unit.
3. Distance between the spots should be measured accurately

CONCLUSIONS: -

We found out a diffraction grating has a very large number of equally spaced slits. When parallel light is incident on a diffraction grating each slit acts as a source of diffracted waves. Those waves therefore interact with one another. Diffracted lights shine on a distant screen which has a central bright spot labelled $m=0$ and a higher order bright fringes that can also be observed.

LEARNING OUTCOMES

- It will provide the modest experience that allows students to develop and improve their experimental skills and develop ability to analyze data.
- Ability to demonstrate the practical skill on measurements and instrumentation techniques of some Physics experiments. Students will develop the ability to use appropriate physical concepts to obtain quantitative solutions to problems in physics.
- Students will demonstrate basic experimental skills by setting up laboratory equipment safely and efficiently, plan and carry out experimental procedures, and report verbally and in written language the results of the experiment.
- Students will develop skills by the practice of setting up and conducting an experiment with due regards to minimizing measurement error.



Evaluation Grid:

Sr. No.	Parameters	Marks Obtained	Max Marks
1.	Worksheet completion including writing learning objectives/Outcomes. (To be submitted at the end of the day).		10
2.	Post Lab Quiz Result.		5
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		5
	Signature of Faculty (with Date):	Total marks obtain	





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