M.SC Zahraa Abbas

Lab. Laser\third stage

Experimental No.1

Yunk

The goal of the experiment:-

Finding the wavelength of laser light

The devices used:

1--laser light

2-Package Publisher2D

3-double slit

4-Monitor

5-ruler, mirror

6-holder

Experience theory:-

The intensity of the oil overlaps and the mercury of the contracts through the crack of Mardi

$I=4A^2$ ($^{Sin2\beta}/\beta^2$) (^{COS2Y}) . Where (^{cos2y}) is the same as the interference factor, and(sin $^{2\beta/\beta2)}$ the same as the humility factor Anime) until B

Β=(π/λ)b sinθ,γ=(π/λ)dsinθ

β,γ) represent phase difference As for(dsin θ,bsinθ) represented The path difference,(A), the amplitude of the light wave incident on the slits,(d) the distance between the slits(, b) the width of the slit and its measured(θ) angle, and (r,d) the radii, so the minimum ends or dark fringe must be found by both factors

When the y=π/2,3π/2,5π/2,..... The intensity becomes zero.

Where dsinθ=λ/2,3λ/2,5λ/2,… ,dsinθ=(m+1/2λ)

M=± 0,1,2,3,…

if it was(t<<D) whereas (t) represent Fringe width go van

(tanθ≈θ≈sinθ) So the distance between two successive dark fringes is directly proportional to D, the distance between the screen and the two slits, and inversely proportional to d and directly to λ

Subject Veton Moon of the Dark Arabs (m=0) when t1=1/2 . authority of the lute holder and the hardship of the Qur’an λd/d When t=(t1-t2)Λd/d ……(1)   t2=3/2 .λd/d

When β=π,2π,3π In the diffraction factor, the intensity becomes zero

Bsin=λ,2λ,3λ,….   ,bsinθ=pλ ,   p=± 1,2,3,…

where p represents the diffraction order of the dark fringe, i.e. when (p =±1) and t where(L<<D) is the L width of the diffraction fringe, then the width of the central diffraction fringe moving between them is equal to

L=2Λd/b   ,λ=Lb/2d …………….(2)

Since n here represents the order of interference, that is, when n = 0, it means the central fringe of the interference, which is in the middle, and since the width of the dark fringe (e) is very small relative to D, the distance between two bright fringes is equal to () why then the distance between any two dark fringes or Illuminated by the interference fringes inside the central diffraction fringe is equal to a fixed amount, meaning that (e = t) why, that is, (e = Ʌd/d) and that the number of dark or bright fringes is equal to

Z=2d/b……(3)

The method of work:-

1-Do not place the screen at a large distance from the person where the laser spot will fall Both radii .

2- find the width of one b slit i and the distance d between them (can be measured Using the micro SQUAH).

3- Measure the distance from the screen to the two slits

4-Calculate the number of bright or dark patients Z and correct the equation number 3.

5-Casually insulted a number of lashes of circulation, darkened and exhausted, and escaped central diffraction.

6-Calculate the width of one war for the width of the bright or dark fringes /the number of fringes semen and dark).

7-Calculate the wavelength from equation No. (1)

8. The walls of the steps are 7,6,5 for a different number of cilia.

9-Measure the width of the central diffraction fringe goingand calculate the wavelength of the laser from equation No. (2).

10-Calculate the average wavelength from the previous steps.

11-compare between the amount of wavelength calculated from the causes of interference and inertia.