

In this lab, you will observe the interference pattern produced by shining a laser beam through a diffraction grating. From the distance between peaks in the pattern, you will determine the distance between the slits in the grating.

The He-Ne laser used in this lab produces red light of wavelength 633 nm. Turn on the laser. Its beam should pass through the diffraction grating. You should observe the interference pattern on the wall.

Use a meter stick to measure the distance Δx between peaks in the interference pattern. Average this distance over several adjacent peaks so that your measurement will be as accurate as possible. Record your result below.

Use the tape measure to determine the distance L between the diffraction grating and the interference pattern on the wall and record your result below.

Calculate the angle θ between adjacent bright spots in the interference pattern and record your result below.

Using $d \sin \theta = \lambda = 633 \text{ nm}$, calculate the distance d between the slits in the grating and record your result below.

$\Delta x =$ _____

$L =$ _____

$\theta =$ _____

$d =$ _____