PHYS 2C

Discussion Section – 2/26

TA: Bharat Kambalur

Email: bkambalu@ucsd.edu

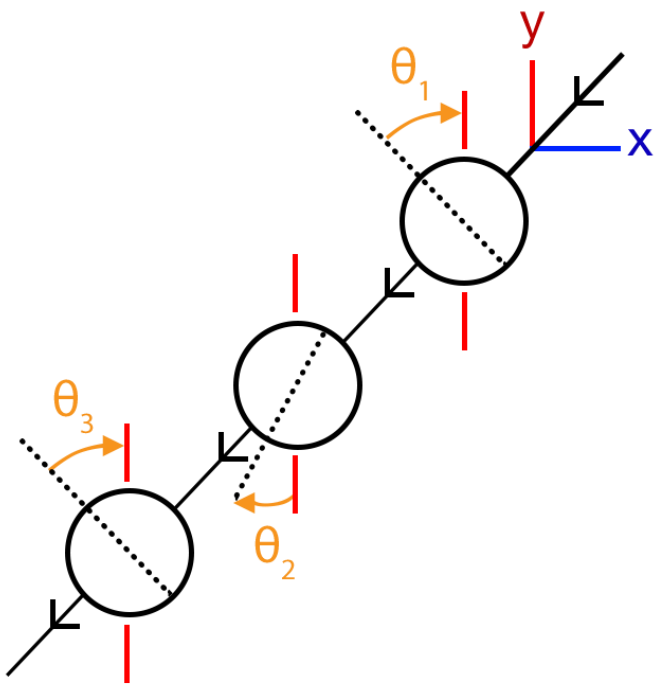
Before we Begin:

- Try and **sit next to a student you don't know**
- Introduce yourselves and find out where the other student is from
- We will attempt to **solve 3 Problems** today

Discussion Problem 1

In the figure, initially unpolarized light is sent into a system of 3 polarizing sheets, whose directions make angles of $\theta_1 = \theta_2 = \theta_3 = 40°$ with direction of the y-axis.

What percentage of initial intensity is transmitted by the system?

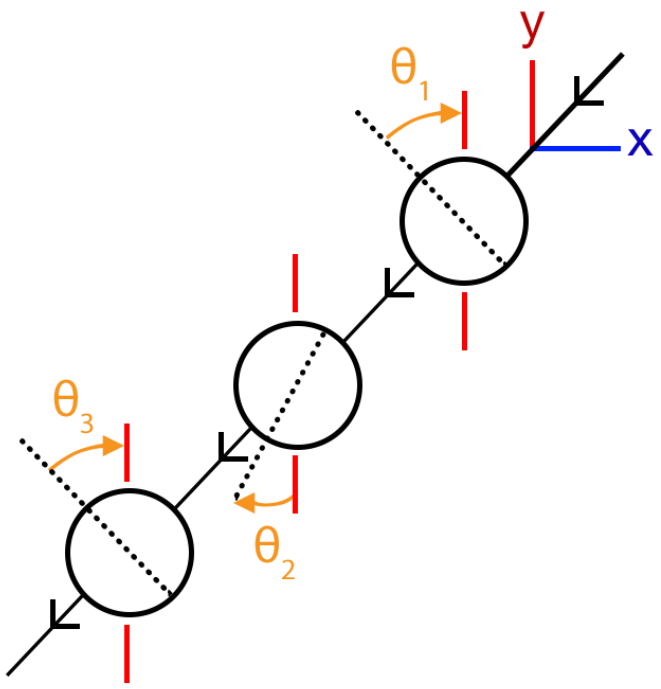


Discussion Problem 1 - Solution

In the figure, initially unpolarized light is sent into a system of 3 polarizing sheets, whose directions make angles of $\theta_1 = \theta_2 = \theta_3 = 40°$ with direction of the y-axis.

What percentage of initial intensity is transmitted by the system?

0.0455%



Discussion Problem 2

Field Strength

The maximum electric field 9.8m from a point light source is 2.0 V/m. What are:

1) The Maximum Value of the Magnetic Field

2) The average intensity of the light there?\

3) What is the power of the source?

Discussion Problem 2 - Solution

Field Strength

The maximum electric field 9.8m from a point light source is 2.0 V/m. What are:

1) The Maximum Value of the Magnetic Field

$$6.67 \times 10^{-9} T$$

2) The average intensity of the light there?\

$$0.0053\ W/m^2$$

3) What is the power of the source?

$$6.4 W$$

Discussion Problem 3

Single-Slit Diffraction

The distance between the first and fifth minima of a single-slit diffraction pattern is 0.500 mm, with the screen 37.0 cm away from the slit when light of wavelength 540nm is used.

a) Find the Slit Width

b) Calculate the angle θ of the first diffraction minimum

Discussion Problem 3

Single-Slit Diffraction

The distance between the first and fifth minima of a single-slit diffraction pattern is 0.500 mm, with the screen 37.0 cm away from the slit when light of wavelength 540nm is used.

a) Find the Slit Width

$$1.598\ mm$$

b) Calculate the angle θ of the first diffraction minimum

$$0.0003379\ rad = 0.01936°$$