The program is called python though - lab report example

Science, Physics

The program is called Python Though

Lab Report Electric field By: Physics (including Earth and space sciences

Events in the Experiment The experiment involves the simulation of calculations and plotting of electric field from the center of the rod. As it was observed, the electric field grows weaker as the distance widens. One of the measurements was done with the single rod with the electric charge perpendicular to and at the center of the rod. This was plotted as shown in figure 1 below.

Figure 1: Electric Field with with charge at the centre of the rod

The second measurement experiment was conducted with the rod broken into a number of pieces. As the number of pieces increased, electric field calculation remained constant, but the numerical value increased. The results were plotted as shown in figure 2 below.

Figure 2: Electric Field against Number of pieces of the Rod

The third measurement of electric field was carried out with the charge along the diagonal of the rod. The electric field reduced as the diagonal distance increased, but the numerical calculation was slightly above the exact value of the electric field (Huray, 2009). The results are as shown in figure 3 below:

Figure 3: Electric field against Diagonal Distance

2. Physics Principles Used

The principle of physics used in this experiment was the Principle of electromagnetism (Grant & Phillips, 2008).

3. Relationships among Parameters and Variables Used

The relationship between the variables was a combined equation as shown

below:

b = arrow (pos = (r1*sin (theta) * cos (phi), r1*sin (theta)*sin (phi), r1*cos (theta))

In this equation, b is the electric field; rl is the distance from the rod to the charge while theta and phi are the two complementary angles between the rod and the charge. Arrow is the actual amount of electric charge.

4. Analysis of the Data Collected

The data collected was made up of the component of electric field and the distances from the center of the rod.

4. 1. Calculation 1: Data Collected

Distance From the Rod (m/L)

Electric Charge (N / C)

0. 1

7013

0. 2

3329

0. 3

2048. 5

0. 4

1418

4. 2. Calculation 2: Data Collected

Number of pieces of the Rod

Electric Charge (N / C)

200

7000

400

7038

600

7039

800

7045

1000

7053

4. 3. Calculation 3: Data Collected

Diagonal Distance (m/L)

Electric Charge (N / C)

0. 5

1440

1. 0

360

1. 5

160

2. 0

91. 091

References

Huray, P. G. (2009). Maxwells Equations. Wiley-IEEE. p. 205.

Grant, I. S & Phillips, W. R. (2008). Electromagnetism (2nd Edition),

Manchester Physics, John Wiley & Sons.