Lab3

Concepcion, April 13, 2009

REPORT N º 2
PHYSICS LABORATORY II

"Electric Field and Potential"

Members: - Carla Caceres
- **Jorge Gonzalez**
- **Fabian Soto**

Teacher: - Alberto Inostroza

Assistant: - Raul Augurto

OBJECTIVES

· Finding how to load electric potential in the plane, drawing the equipotential lines

· Derive the form of the electric field charge distribution in the plane, from the diagram of equipotential lines.

MATERIALS

· Graph paper

· Glass cuvette
· Cables
· Voltmeter
· Multimeter
· Water
· Support.

MOUNT

Once the materials were revisedTo make sure they were in good condition, they proceeded to mount the work platform. He filled the glass bowl with more or less about 3 or 4 [mm] de Aguayo was placed underneath a sheet of graph paper which must be located in such a way that the fixed lines form a straight line .. With the support holding the positive charge and negative charge of the voltmeter and multimeter loads began measuring millivolts marked the machine upon entering the charge in the source water, either in the positive dipole or a refusal. Values were recorded in a table and proceeded to prepare the report.

THEORETICAL INTRODUCTION

First define some basic concepts for this report:

Equipotential surfaces: These are areas which at any point have the same electrical potential

Power Line: We used to see the field strength as a much greater intensity of field lines (ranging from positive to negative)

Electric Field: A disturbance in the vicinity of an electrical charge that is produced by the same load.

In this laboratory demonstrated the existence of the electric field also know how to take the lines of force of an electric field and see your address

SCENARIO APPROACH

· There is the Electric Field

· Power lines go from positive to negative

• The Water is an equipotential surface

MEASUREMENTS

Table of measurement data obtained

(x, y) millivolts (x, y) millivolts (x, y) millivolts (x, y) millivolts
(0.0) 4.55 (4.0) 2.65
(0.1) 4.57 (5.0) 2.20
(0.2) 4.58 (6.0) 2.41
(0.3) 4.60 (7.0) 2.61
(0.4) 4.62 (8.0) 2.81
(0.5) 4.64 (1.1) (1.7,8.4)
(0.6) 4.65 (2.2) (2.3)
(0.7) 4.66 (3.3) (2.4,2.3)
(1.0) 4.26 (4.4) (3.2,2)
(2.0) 3.88 (5.5) (5.4,6.8)
(3.0) 3.32 (1.1) (1.7,8.4)

ANALYSIS

Mount the distribution system under study and that cargo will be identified by the teacher: dipole, parallel plate, flat plate and point charge.

Pour water in glass bowl until about 3 or 4 [mm] deep.

Measure the electrical potential between the negative electrode and each grid point defined in a horizontal plane.

Tabulate the data for you, considering the position (x, y), and the value of the potential. With this database, draw the equipotential lines.

(x, y) millivolts (x, y) millivolts(x, y) millivolts (x, y) millivolts
(0.0) 4.55 (4.0) 2.65
(0.1) 4.57 (5.0) 2.20
(0.2) 4.58 (6.0) 2.41
(0.3) 4.60 (7.0) 2.61
(0.4) 4.62 (8.0) 2.81
(0.5) 4.64 (1.1) (1.7,8.4)
(0.6) 4.65 (2.2) (2.3)
(0.7) 4.66 (3.3) (2.4,2.3)
(1.0) 4.26 (4.4) (3.2,2)
(2.0) 3.88 (5.5) (5.4,6.8)
(3.0) 3.32 (1.1) (1.7,8.4)

On your diagram, draw vectors showing the directions assumed by the electric field on the plane.

Compare the results with the theoretical description for the corresponding symmetry.

Alternatively, given the above results, find the functional relationship of the potential for the distance. In the case of cylindrical electrodes, correct the curve (take LN r)

CONCLUSIONS

· With data taken in the laboratory is able to build a picture of the equipotential surfaces and lines of force which can visualize the electric field in graphical form.

· They also found the electric potential equation which is Y =-1.72X + 5.06 and differentiating this equation with respect to x we have dy = -1.72 so the electric field would be $E = \frac{1.72\ r}{dr}$

COMMENTS

As we first laboratory was made more difficult the realization of this report and that he was not ready to do it. (You must remember that it took place the first lab so when we make measurements was more complicated).

REFERENCES

· Serway R. (1996) Physics Volume 2 ..... Editorial Mc Graw Hill