Experiment 11 Electric charges and Electric and Magnetic Fields

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Section Number: **51002**

REPORT

Instructions

1) Follow all of the lab activity steps given in the Lab Procedure.
2) Submit this entire workbook (including screenshots) to Canvas.
3) TYPE YOUR ANSWERS IN THE PROVIDED SPACES below.

Results

1) In a well written paragraph in the box below, answer **all of the following questions:**
What is the relationship between electric field lines and equipotential lines that you observed in doing the lab?
What effect did adding more of one type of charge (but not the other) have on the general position and shape of the equip
How did the electric field lines and equipotential lines change when the dipole was two charges of the same type?

The electric field lines appear along the equipotential lines in such a manner that would suggest that the former is perpendicular to the latter. By adding more of a single type of charge, the equipotential lines seemed to deviate more towards the increased charge. The resulting electric field lines and equipotential lines, as a result of the dipole of equal charges, seemed similar to what could be described as a collision, or a push back of sorts.

2) In a well written paragraph in the box below, answer **all of the following questions:**
When you simulated a single charge next to a line of negative charge, how specifically did the field and equipotential lines around the line of charge differ from when the negative charge was a point charge (be as descriptive as you can)?
Based on what you observed with the line of negative charge, how do you predict the field lines and equipotential betwee negative charge (again, be as descriptive as you can and remember you are discussing the prediction from before you se
What effect would adding more charges (both positive and negative) to the lines have on how closely your prediction mat

The electric field lines and equipontential seemed to be strongly drawn towards the line of negative charges, far more so than if it was just a single negative charge; it seemed to overpower the single positive charge. I hypothesized that with equal lines of opposing charges, the resulting field lines and equipotential lines would behave in a similar manner as if the system had only one positive and one negative charge; the only difference would be that there would be a greater “surface” area. The adiditon of more charges would follow along my prediction rather closely as the increase equal increase of positive and negative charges would produce similar results to a system with only one positive and one negative charge.

3) In a well written paragraph in the box below, answer **all of the following questions:**
What pole was the red end of the compass? The white end? How do you know?
What pattern does the compass follow as you move it around? How does the direction of the needle compar
What happens to the strength of the field as you get further from a magnetic pole? What is the strength of th

The red end of the compass is the south pole while the white end is the north pole as each end are clearly attracted to their corresponding end of the magnet. The needle consistently follows a pattern in which the north pole will be directed towards the north while the south pole will be directed towards the south, which are often consistent with the direction of the field. The strength of the field is noticeably weak the further from the magnet and is considerably stronger the closer to the magnet.

4) Based on your observations, what do you expect the relationship between magnetic equipotential lines and tl
Would a magnet moving along an magnetic equipotential do work? What about one moving along a magneti

I would imagine that the magnetic field lines would be perpendicular to the equipotential lines, similar to the electric field lines. The magnet would, as a result of the normal relationship, would not do work, but along the magnetic field line, it will do work because there exists a force.

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ɛt up the line of positive charge)?
ched the simulation? Why is this?

ɛ to the direction of the field?
e field like inside the bar magnet?

he magnetic field lines to be?
ic field line? How do you know?