2.9: Conclusion

In this chapter, we gained a better understanding of the properties of electric charge. We saw that an electric charge is associated with an electric field and that electric fields can exert electric forces on other electric charges. We also saw how to visualize the electric field through field-vector and field-line diagrams. Finally, we learned about various electric field models for common charge distributions under the assumption of continuously-distributed charge. We will use some of these electric field models in later chapters. These concepts covered in this chapter are fundamental to the study of electricity and will form the foundation of our future studies as we work to understand the components and properties of electric circuits.

In particular, we now know why two charged balloons in Figure 2.9.1 repel each other. Both balloons must have a net charge (either an excess or deficit of charge) probably because they were rubbed on another object. The net charge on the left balloon creates an electric field around that balloon. The electric field of the left balloon then exerts an electric force on the right balloon. Similarly, by Coulomb's Law, we know that the right balloon also exerts an equal and opposite electric force on the left balloon. Because the balloons have the same sign charge, they are repelled.

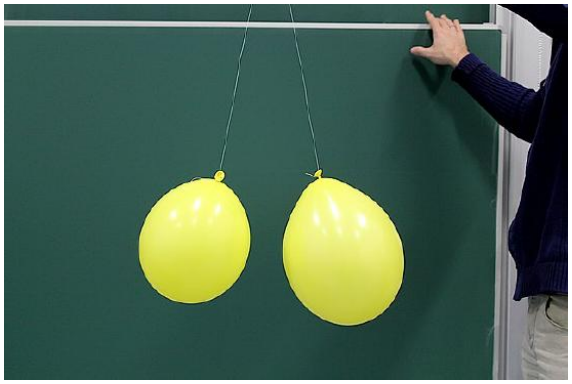

Figure 2.9.1: Repulsive electric forces between two charged balloons. [1]

In this chapter we have focused on electric fields and forces. However, it is also possible to describe physical systems using an energy-based approach. In next chapter, we will investigate this alternative approach.

References

1. Wikimedia Commons contributors. File:Repulsive-electric-force-between-balloons.jpg [Internet]. Wikimedia Commons. (CC BY-SA 4.0, MikeRun)