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E&M Lab 2: Discussion Questions

1. The range of the calculated Coulomb constant does agree with the accepted value. The calculated value was 8.43E+9, just 6% off the literature value of 8.98E+9, although it was a bit lower just as your calculated value was.
2. The value is closer when the spheres are further away, more or less; at 20cm the measured K was 1.04E+10, very slightly above the literature value. At 15cm, it was 8.94E+9, just under the literature value. As the spheres were brought closer together, the measured value falls away from the calculated value, decreasing as they are brought together.
3. As the spheres are brought together, the positive charge from one will repel the positive charges on the other, moving them to one side. This essentially ‘polarizes’ the sphere, giving it a positive side and a negative side. The negative side will face the other sphere, attracting it towards it(positive attracts towards negative).
4. Since there is an additional force of attraction between the spheres, other than the one created by the torsion wire, the number is skewed to be slightly lower, as the wire needs to be turned less in order to cancel out the repulsive force, since there is also an attractive force working with it that was not accounted for.