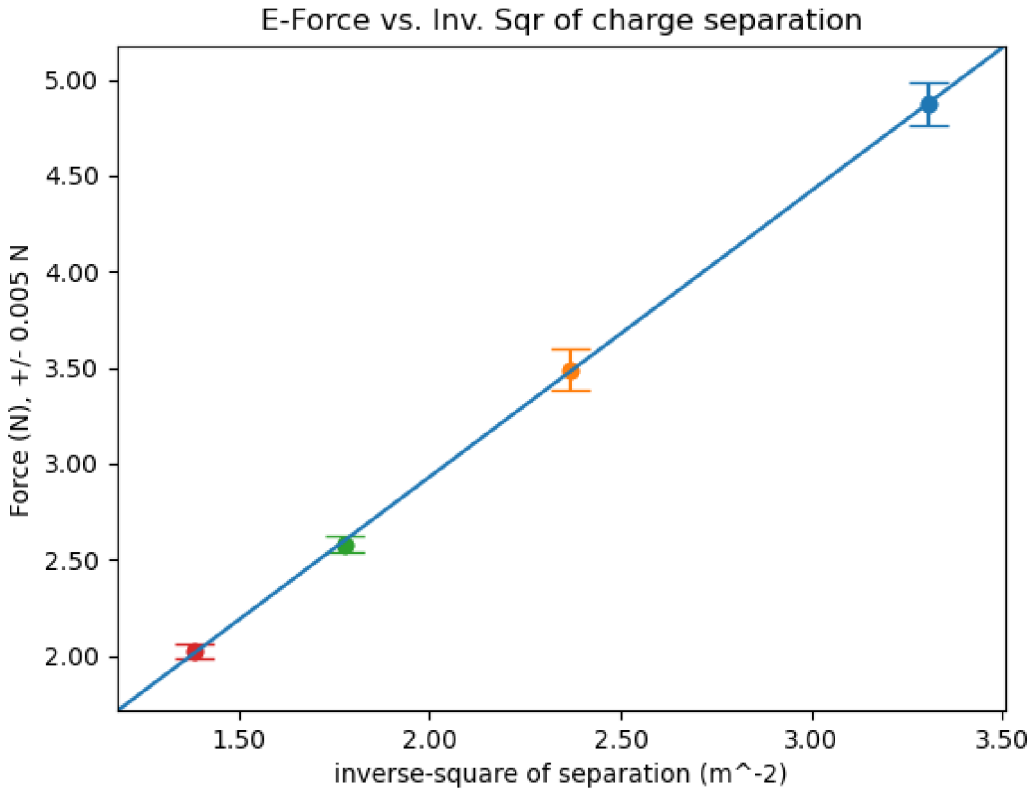
Physics 122 Lab Group AV-3
Lab A2 Data Analysis



According to our plot, the relationship between the electric force between two particles with respect to separation is an inverse-square relationship.

The data for the plot was collected by having each group member arrange particles separated by preset distances: 0.55 m, 0.65 m, 0.75 m, and 0.85 m (instrumental uncertainty: 0.005 m). We then averaged the force values collected by each group member for each separation distance and graphed them with respect to the inverse-square of each separation distance.

The dominant uncertainty was the experimental uncertainty of the force recorded, which was greater than the instrumental uncertainty (± 0.005 N) for all points plotted. The best-fit line intersects the experimental-uncertainty error bars for all four data points plotted, and the determination coefficient of the best-fit line (calculated using SciPy) was $R^2 = 1.000$, indicating the inverse-square relationship between the force and separation distance is a perfect match.