

# 1 • Data

## 1.1 Experimental Values

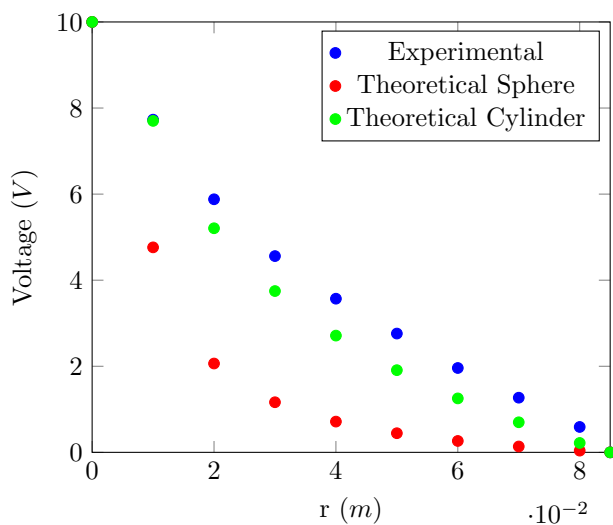
r (m)	+y (V)	+x (V)	-y (V)	-x (V)	Average (V)
0.000	10.000	10.000	10.000	10.000	10.000
0.010	7.740	7.240	8.330	7.590	7.730
0.020	6.050	5.430	6.080	5.940	5.880
0.030	4.750	4.160	4.580	4.740	4.560
0.040	3.680	3.210	3.480	3.910	3.570
0.050	2.810	2.400	2.580	3.230	2.760
0.060	2.050	1.610	1.850	2.340	1.960
0.070	1.320	0.950	1.140	1.670	1.270
0.080	0.580	0.310	0.420	1.060	0.590
0.085	0.000	0.000	0.000	0.000	0.000

## 1.2 Theoretical Values

r (m)	Sphere (V)	Cylinder (V)
0.000	10.000	10.000
0.010	4.763	7.701
0.020	2.064	5.207
0.030	1.164	3.748
0.040	0.714	2.712
0.050	0.445	1.909
0.060	0.265	1.253
0.070	0.136	0.699
0.080	0.040	0.218
0.085	0.000	0.000

## 2 • Analysis

### 2.1 Plot



### 2.2 Geometry

The geometry of the dot-ring configuration is closest to a cylinder, because the experimental voltages measured on the dot-ring configuration more closely match the theoretical voltages of a cylindrical geometry rather than a spherical geometry.

### 2.3 Improvements

If we were to repeat the lab, we would be more precise in where we measured our voltages, since we were not entirely consistent with that when we did our lab.

### 2.4 $\epsilon_0$ Value

The average experimental  $\epsilon_0$  value obtained was  $6.32 \times 10^{-12} \frac{C^2}{N \cdot m^2}$ , which has a percent error of 28.59%