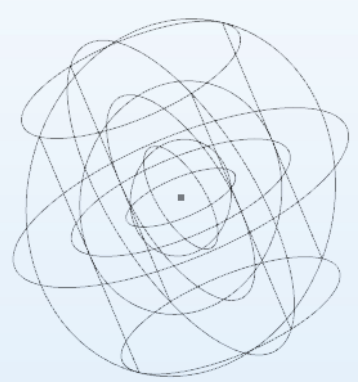
- 0.001 A point current source
- 1e10 S/m conductivity inside cylindrical electrode
- 0.2 conductivity medium
- All meshed to 0.00002.

Results of integrating charge density over various shapes:

- A cylinder of typical electrode size
    - Cylinder is maximum shape (with other shapes inside it)
        - 0.001472 entire cylinder
        - 0.0010192 if integrate over just curved side
        - 0.00045284 just top and bottom
    - If cylinder contained within sphere of same conductivity
        - 0.00135 entire cylinder
        - 0.000856 if integrate over just curved side
        - 0.000278 just top and bottom.
- A sphere that just encompasses the cylinder
    - 0.000999 (if everywhere inside sphere has same conductivity as electrode)
    - 0.0010571 (if volume between sphere and the cylinder is same conductivity as medium)
- A sphere just inside the cylinder (same radius = 0.000648)
    - 0.0010018
- A smaller sphere inside the cylinder (half the radius of the cylinder = 0.000324)
    - 0.0010017
- A cube with edge length half equal to the radius of the cylinder
    - 0.000988
- A rectangular box of dimensions 0.00065 x 0.0015 x 0.01096 (fits inside cylinder)
    - 0.0016307 whole box
    - 0.0014498 just sides (not top and bottom in same plane as cylinder top/bottom)
- Ellipse (same height as cylinder but short axes equal to radius of cylinder)
    - 0.0011638
- Small cylinder
    - 0.0011640 entire cylinder
    - 0.00086023 if integrate over just curved side
    - 0.00030374 just top and bottom



Testing out different methods of current source

Geometry: Sphere of radius 0.000648

Surface Area = $4*pi*r^2$ = 5.309e-6

Apply a Boundary Current Source of I/A = 0.001/5.309e-6

- Integrate normJ (what I was doing above with point source)
  - 0.00048436
- Integrate nJ (this is not available option for point source method, but works here)
  - 0.00099367

Apply Floating Potential of I = 0.001 A

- Integrate normJ (what I was doing above with point source)
  - 0.0004865
- Integrate nJ (this is not available option for point source method, but works here)
  - 0.000973

<u>Create cylindrical shell with Floating Potential of I = 0.001 A</u>

- Integrate normJ (what I was doing above with point source)
  - 0.0004499
- Integrate nJ (this is not available option for point source method, but works here)
  - 0.0008998