



Figure 1. (Left) Two-dimensional view of total current density $|\mathbf{J}|$ of an electron vortex as a function of spatial scale (X and Y where the center of the vortex is $X = Y = 0$), with a radius of 15 km. The current density profile is defined in Equation 1. The white arrow shows the spacecraft path across the structure. (Right) The current density theoretically seen in both the X and Y directions along the given spacecraft path.