

Description

The Electric Field created by the Tesla coil reaches beyond the glass dome and into the air surrounding the plasma ball. This Electric Field can easily be investigated with a small light emitting diode (LED). Bring either of these near the plasma ball and they will light up when aligned radially, but not circumferentially. This demonstrates that the voltages are decreasing with radial distance or (equivalently) that the Electric Field is radial.

The first thing you and your students will notice about the sphere is that by placing a conductor near the surface of the globe, the streams of plasma seem attracted to it. Since the plasma streams are composed of ionized gas molecules, these charged particles are attracted to an uncharged object, similar to the way a charged balloon is attracted to a neutral object (like the wall of your room). You may want to encourage your students to experiment and see if they can attract more streams with different types of conductors or insulators.

The gasses in the plasma globe give off distinctive colors while the globe is operating. These colors are characteristic of the specific gasses in the tube. Your students can see the individual frequencies of light emitted by the globe if you darken the room and allow them to view the glowing gas through small pieces of diffraction grating.

You may want to try placing a neon light bulb near the globe. Your student's will see the bulb light up. Try holding the bulb at different distances from the globe.

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