

Maximizing Electric  
fields wrt GND

# Phantom electric field amplitudes. (e123 t1)

E pulse stimulation amplitudes with different GNDing strategies in a petri dish of 0.9% saline, electrodes in saline are 7mm apart.

- E pulse, no GND attached  $598\mu V$  peak-peak
- E pulse, GND plate underneath petri dish, 497 microvolts peak-peak
- E pulse, GND in solution  $217\mu V$ .

Note: I repeated each of these measures 5 times, and the trend holds.

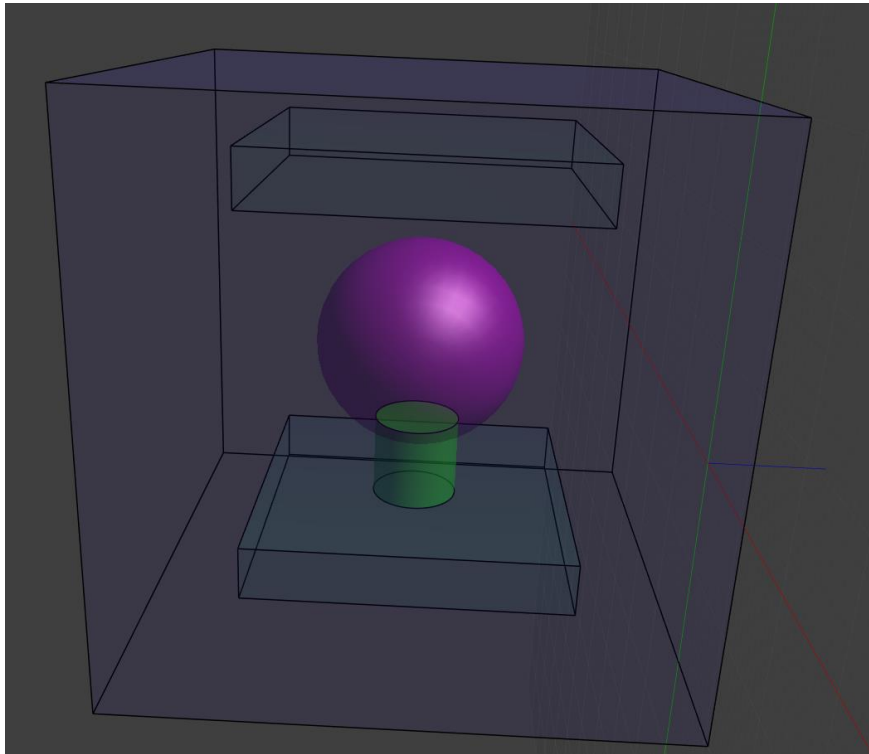
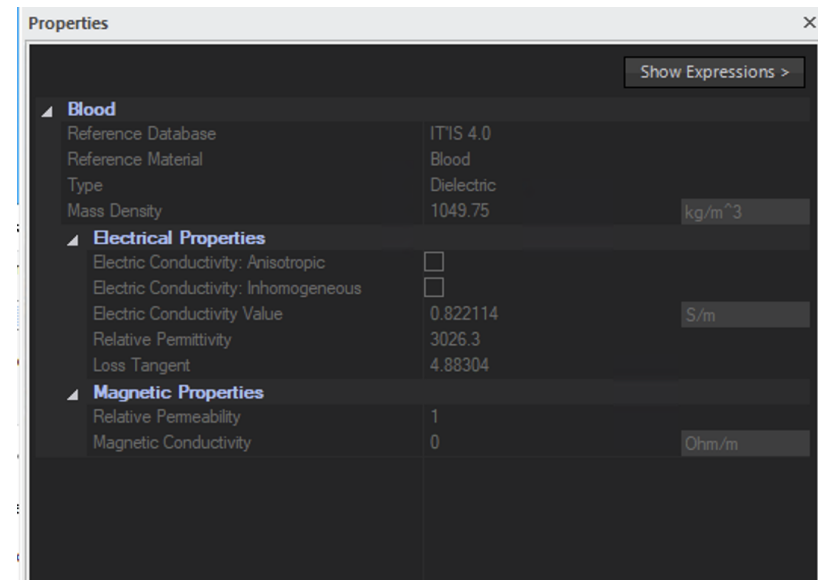
E frequency switch modulation amplitudes with different GNDing strategies. I do a strict filter above 1MHz to obtain the 1MHz + 1020Hz which may be attenuating the amplitudes a tiny bit. Either way, the amplitude trend with GND distance still holds.

- fswitch, no GND attached  $272\mu V$  peak-peak
- fswitch, GND plate underneath petri dish, 235 microvolts peak-peak
- fswitch, GND in solution  $61.3\mu V$ .

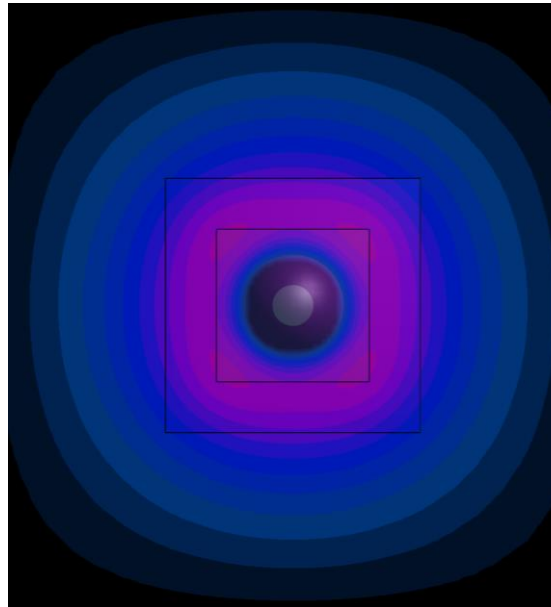
This suggests, that to wirelessly transmit a signal to another body separated by air, I should have the GND as far away as possible.

# Quasistatic Capacitor

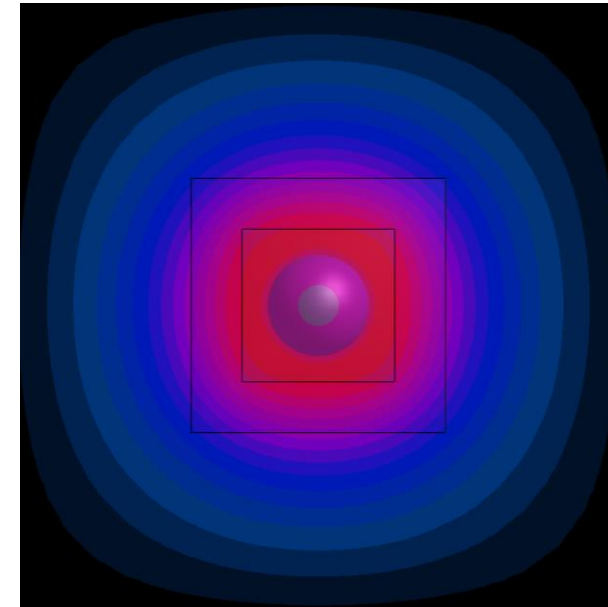
When connected to GND plate, the sphere's potential is 0. The other plate has 50V. When not connected to the GND the sphere has a higher potential. I am not sure if I am successfully applying a complex permittivity, but I have selected the material: blood.



Geometry



GND



NO GND

