Maxwell

Setup

1. New projct

Alt scroll – rotation

Alt Shift scroll – zoom

Shift scroll – pan

1. Maxwell 3D – Solution type – DC
2. Maxwell 3D – design setting – set insulator value to 1e-15 (leave conductor as is)

Will need to create a cFINE model COMPONENT (this will allow me to add this component to new models in the future, so that I don’t have to recreate it every time

Import cuff

Create saline (big ass box 200x200x200mm)

Import Image

Save this as base model

Activate a specific contact and save as elecNactive

1. Select nerve facing face of the electrode
2. Maxwell 3d design, excitations, assign current
3. Add DC pulse of 1mA
4. DEAL WITH CATHODE VS ANODIC IN MATLAB B/C MAXWELL LOSES THE SIGN. CATHODE = abs(V)\*-1; an = abs(V)
5. Create sinks – select all faces that you want to act as a sink, then same process except assign sink (THINK ABOUT SALINE + ANODE STRIP vs ANODE STRIP ONLY)

Analysis setup

Right click analysis; add solution set-up

Max #passes – 100

%error = 1

Right click and RUN (no need to set up mesh, this has an adaptive one that does it for you)

Create variables – for anything you’d want to be able to change

1. Project - project variable- each variable name must start with a ‘$’

Create shape using the draw shape from toolbar

1. Double click on element in design history, and set values using your variables
2. Double check units after saving, b/c Maxwell sometimes changes them on you

Image features before importing

Need to define both the endoneurium boundary and the perineurium boundary (2 circles per fascicle)

* Perineurium thickness = 0.03\*endoneurium diameter

Need to define epineurium

Scale bar

Endoneurium parameters

Relative permittivity – simple - 1

Conductivity – anisotropic - ????

Perineurium

Conductivity – simple - ???

Epineurium (everything not fascicle)

Conductivity simple - ???