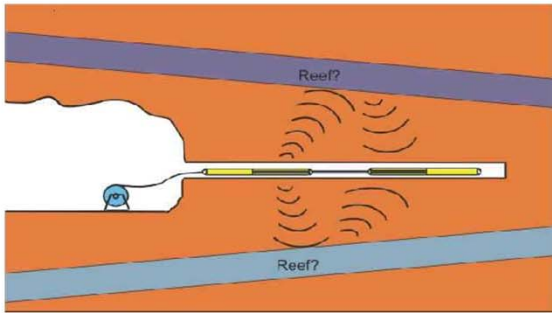
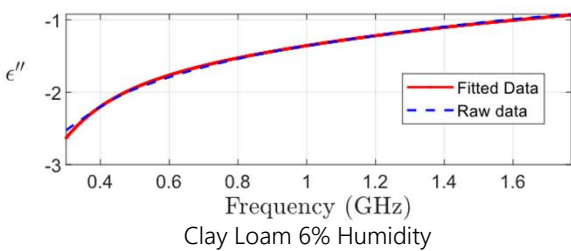
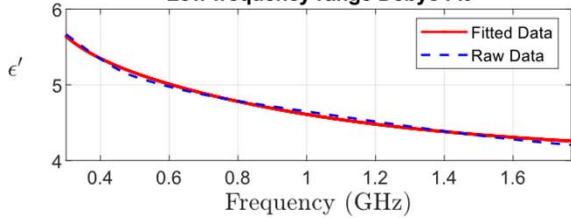


Dispersive Analysis for Wireline Logging – Andres Velasco

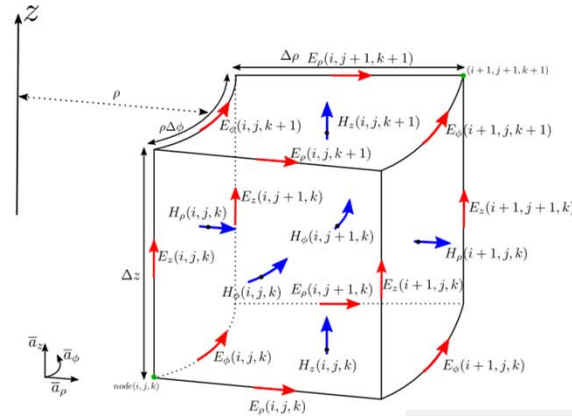


$$\epsilon_r^*(\omega) = \epsilon_\infty + \sum_{k=1}^N \frac{\Delta\epsilon_k}{1 + j\omega\tau_k}$$

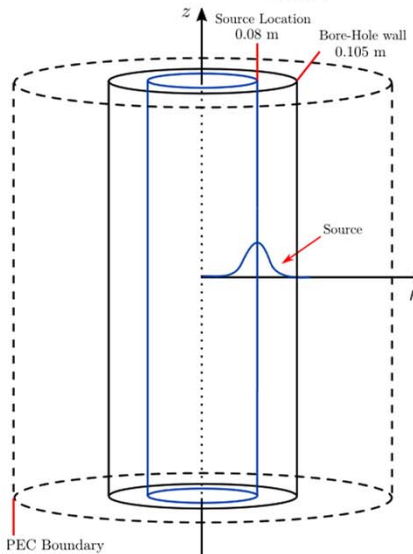
Low frequency range Debye Fit



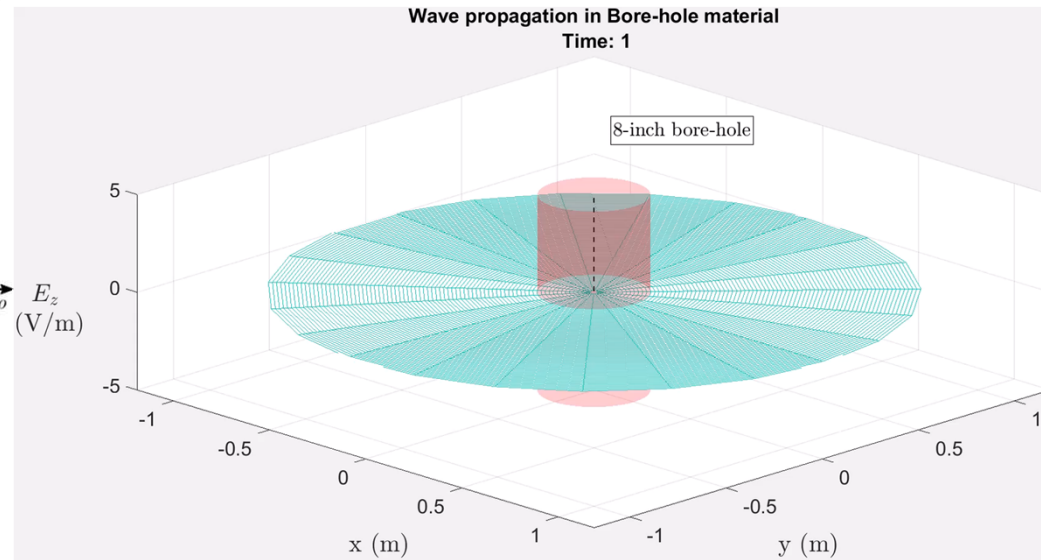
Clay Loam 6% Humidity



$$\vec{D}(t) + (\tau_1 + \tau_2) \frac{\partial \vec{D}(t)}{\partial t} + \tau_1 \tau_2 \frac{\partial^2 \vec{D}(t)}{\partial t^2} = \epsilon_o \epsilon_s \vec{E}(t) + \epsilon_o (\epsilon_{s1} \tau_2 + \epsilon_{s2} \tau_1) \frac{\partial \vec{E}(t)}{\partial t} + \epsilon_o \epsilon_\infty \tau_1 \tau_2 \frac{\partial^2 \vec{E}(t)}{\partial t^2}$$



Wave propagation in Bore-hole material
Time: 1



Clay Loam 6% Humidity

