**ECE 546 HOMEWORK No 5 Due Wednesday, March 8, 2018**

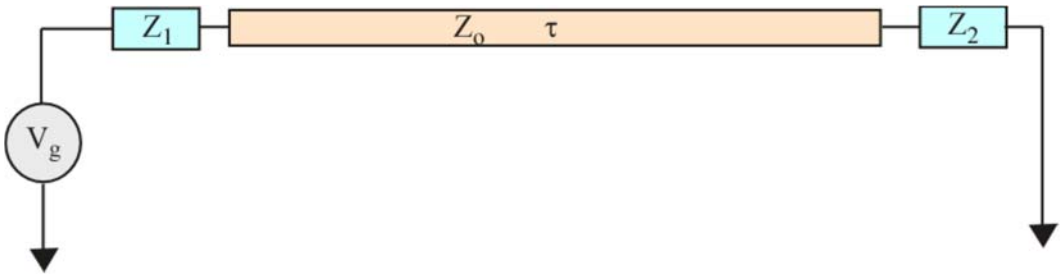
1. Write a code to simulate the response of a lossy twisted-pair 100-meter cable terminated with linear resistive loads. Test your program using the example shown below. Use $Z_1$ = 50 Ω and $Z_2$ =10 KΩ.

The parameters of the cable are L = 145 nH/m, C =14 pf/m. The skin effect resistance is: $R_o = 5.0\,\Omega/m - \sqrt{GHz}$ . Show near and far end plots for two different loss models:

(a) $Z(f) = R_o\sqrt{f} + jL\omega$

(b) $Z(f) = R_o\sqrt{f} + jR_o\sqrt{f} + jL\omega$

Which model is correct? Why?




The pulse characteristics for $V_g(t)$ are as shown in the figure below, with time delay: $t_d$ = 5 ns, rise time: $t_r$ = 2 ns, fall time: $t_f$ = 2 ns, pulse width: $t_w$ = 20 ns, pulse amplitude: $V_{max}$ = 1 volt