Preparation Assignments

Due Wednesday, August 28

For a lossless line, what is the inductance, \( L \), and capacitance, \( C \), of a 75 \( \Omega \) transmission line with velocity of propagation of 0.75\( c \)?

What is the transmission delay of 100 meters of that line?

At 15 MHz, how long is the line in wavelengths, \( \lambda \).

Due Thursday, August 29

Defining the direction of propagation on a transmission line as the positive \( z \)-direction, determine the voltage and current time domain expressions of the forward propagating waves for a 10V, 10 MHz source attached to a 0.83\( c \), 75 \( \Omega \) line.

Due Monday, September 2

Using classical mechanics to describe the hydrogen atom, an electron orbiting a proton nucleus, determine the magnetic radiation from a single atom. You may use any atomic distances and orbital velocities you find in the literature.

Due Wednesday, September 4

Determine the phasor notations of the expressions from the 8/29 assignment.

When is the reflection coefficient negative?

Can the reflection coefficient be imaginary?

When is the reflection coefficient zero?

When is the magnitude of the reflection coefficient 1?