Propogation Delay – Coefficient of Transfer:

All Coax have distrubuted Inductive and Capactive elements along the length of the coax, which results in a delay of the signal, traveling a little more than half the speed of light (~2/3).

- For most instances, intially consider 0.660 as likely, as a common starting point..
- Example(s);
  - With a coax measuring 76", translating to 6.4ft, would calculate to be electrically 9.5 ft.
  - The 9.5 ft would represent one half of a dipole in length, if this was a dipole.
  - Using the formula 468/ft calculates out to 36.47MHz
  - Considerin this coax like one leg of a dipole, then this coax should look like a shorted-quarter-wave stub, showing as zoro ohms at the frequency of 48.7MHZ..
  - We find that with the MFJ 259 Analyzer, this actually happens at 58.2MHZ, which actually is pretty close.
  - Calculating backwards, it turns out that we can resolve the "Propagation Delay Coeficient" is actually 0.670, which is supprising ly close to our 0.660.

Consider the following that exists at this frequency:

- An open at the opposite end from the connection at the MFJ, would appear at the MFJ as the exact opposite, i.e. Zero ohms.
- A short at the opposite end from the connection at the MFJ, would appear at the MFJ as an exact opposite, i.e. Infinite ohms.
- An Inductance at the opposite end from the connection at the MFJ, would appear at the MFJ as an exact opposite, i.e. A Capacitance.
- A Capacitance at the opposite end from the connection at the MFJ, would appear at the MFJ as an exact opposite, i.e. An Inductance.

So why is this important?

There are anumber of times when it may be important to deal with "Phasing" certain coax lingths.

- For instance, taking a pair of 11-Elelment Beam Antennas, both of which have gamma-match feeds, and constructing them as a pair.
- Both of these require a 50-ohm feed, but when coupled into a T-Coupler to a single 50-ohm coax, that would result in 25-ohms, as a missmatch.
- But there is a method of using certain lenghts of RG-59 (75-ohm coax) to phase the opposite ends to look like higher individual ohms, parallel into the T-Coupler, with the output as 50-ohms to feed the 50 ohm coax.
- The problem is that you cannot just simply cut a length of coax and hope it's the correct "electrical length".
- You can begin by first estimating the length by the propagation coeficient, and add some before cutting it, and putting a connector on one end of the coax.
- With the MFJ-Analyzer set to the desired frequency and connected to coax, gradually shorten the coax until it reads zero ohms on the MFJ. Ignore all other readings on the MFJ.