

Topics for Today:

- Course Info:
 - Web page: <https://pages.mtu.edu/~bamork/ee5220/>
 - Book, references, syllabus, more are on web page.
 - Software - Matlab. ATP/EMTP [License - www.emtp.org] ATP tutorials posted on our course web page
 - EE5220-L@mtu.edu (participation = min half letter grade)
- HW#7 - due latest 9am Tues after break - what is status?
- Term Project - Week 9 (Monday Mar 23rd):
 - a) complete reference list and
 - b) Detailed table of contents using format given in Term Project Guidelines.
- Multi-conductor line models for transient and traveling wave behaviors
 - Traveling wave equations for multi-conductor system
 - References for Transmission Line model development
- - B.A. Mork, "Parameters for Modeling Transmission Lines and Transformers in Transient Simulations," *Proceedings, IEEE Power Engineering Society Winter Meeting*, vol.2, pp.716-717, Columbus, OH, Jan 28 - Feb 1, 2001.
 - Snelson, Meyer & Dommel, Marti, Noda, Gustavsen
- Reflections and refractions of traveling waves.
 - Sections 9.3 and 9.4 of your text
 - Discontinuity in impedance is main issue. Handle lumped impedances at source or receiving end the same as change in Z_C along the length of line.

ATP Pointers

- Save Metafile
- Alt - PrtScr (Active Window)
Ctrl - PrtScr (Whole Screen)
- PlotXY - Add symbols
Copy → Clipboard .wmf.
Copy → Metafile

File Types: Associate .acp with ATPDraw.exe

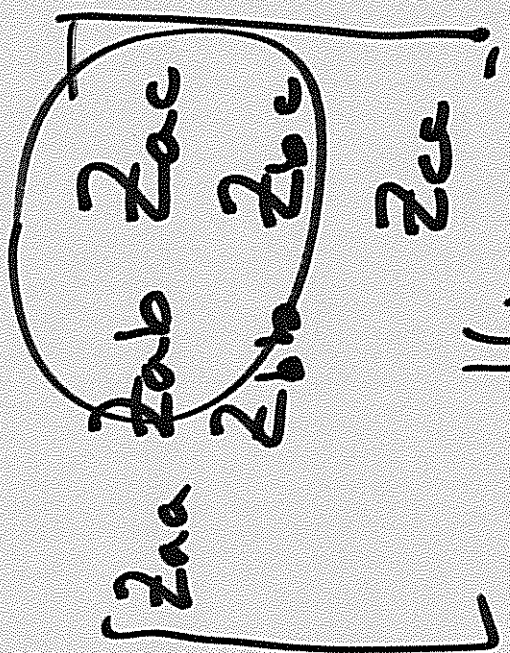
o Bergeron - Constant Z_c

o Pi - Lumped Param

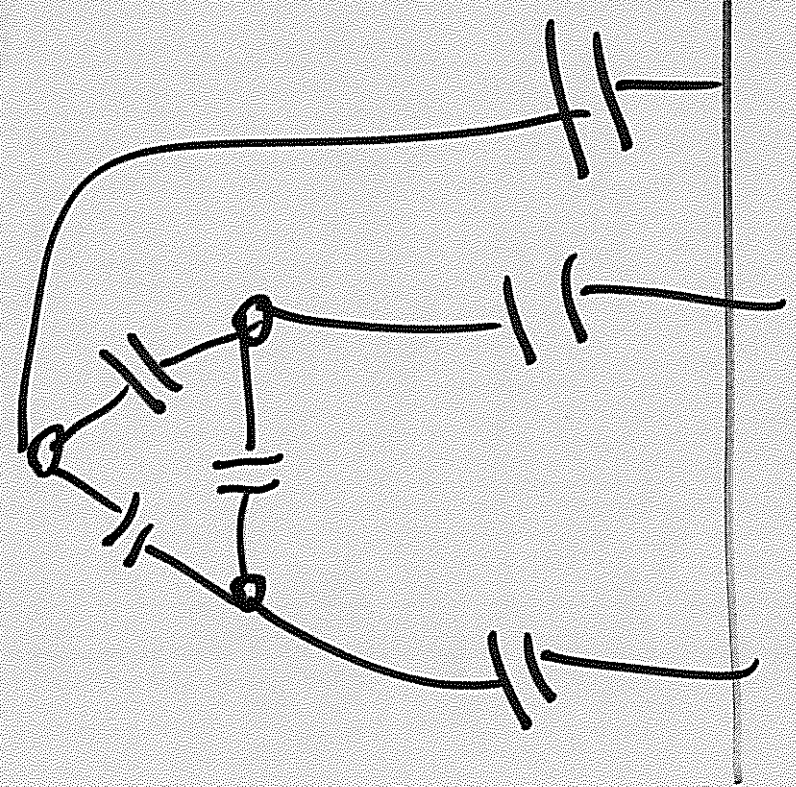
o Marti - $Z_c(f)$

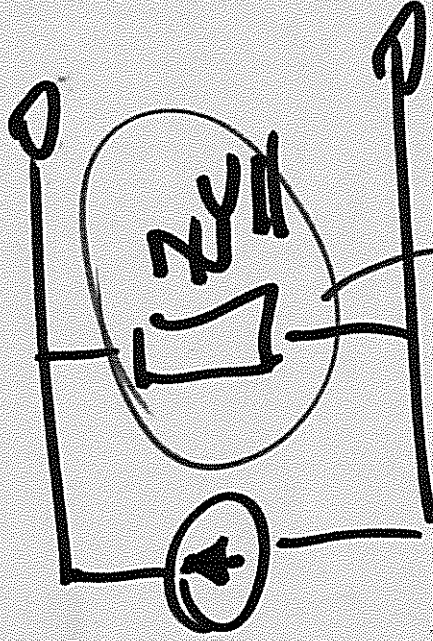
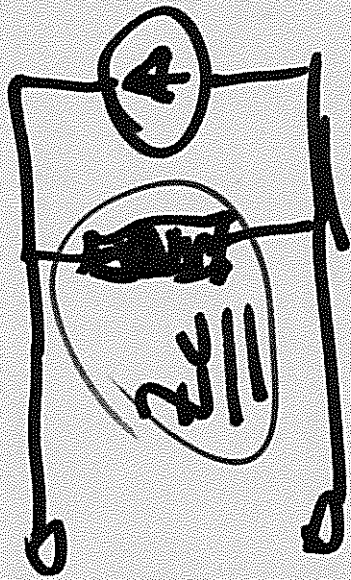
o Semlyen -

o Noda -



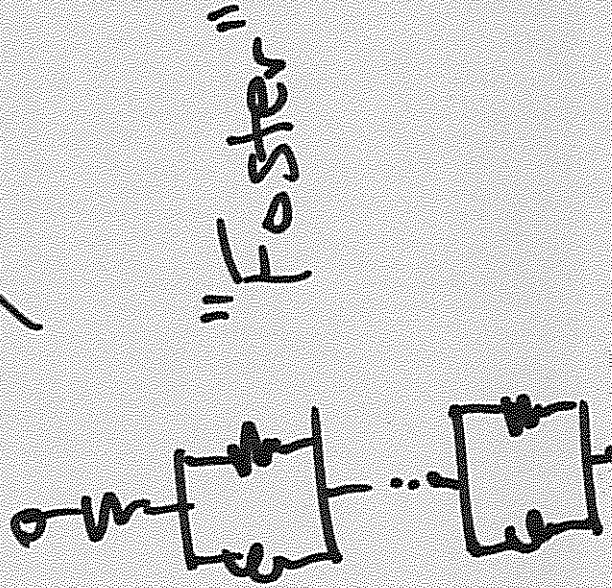
$$\begin{bmatrix} Z_{aa} & 0 & 0 \\ Z_{ba} & Z_{bb} & 0 \\ Z_{ca} & 0 & Z_{cc} \end{bmatrix}$$





Bergeron

S-Matti



"Foster"

PI: - Short Lines "c" = Condition (see math)

