

## ECE 523 Lecture 3

Assign base values

$$V_{\text{base}} := 230\text{kV} \quad V_{\text{base}} = 230\text{ kV}$$

$$V_{\text{bus1}} := 235.23\text{kV}$$

$$V_{\text{bus1\_pu}} := \frac{V_{\text{bus1}}}{V_{\text{base}}} \quad V_{\text{bus1\_pu}} = 1.023$$

$$\text{pu} := 1.0$$

$$V_{\text{bus1\_pu}} = 1.023\text{ pu}$$

$$\text{MVA} := 1000\text{kW} \quad \text{MVAR} := \text{MVA}$$

$$S_{\text{base}} := 100\text{MVA}$$

$$V_{\text{base2}} := 230\text{kV}$$

$$x_{\text{trans\_rated}} := 0.1\text{pu}$$

$$V_{\text{transHV}} := 220\text{kV} \quad V_{\text{transLV}} := 13.2\text{kV}$$

$$S_{\text{rated\_trans}} := 200\text{MVA}$$

$$x_{\text{trans\_sys}} := x_{\text{trans\_rated}} \cdot \left( \frac{V_{\text{transHV}}}{V_{\text{base2}}} \right)^2 \cdot \frac{S_{\text{base}}}{S_{\text{rated\_trans}}}$$

$$x_{\text{trans\_sys}} = 0.046 \text{ pu}$$