

Fundamental cut-set equations

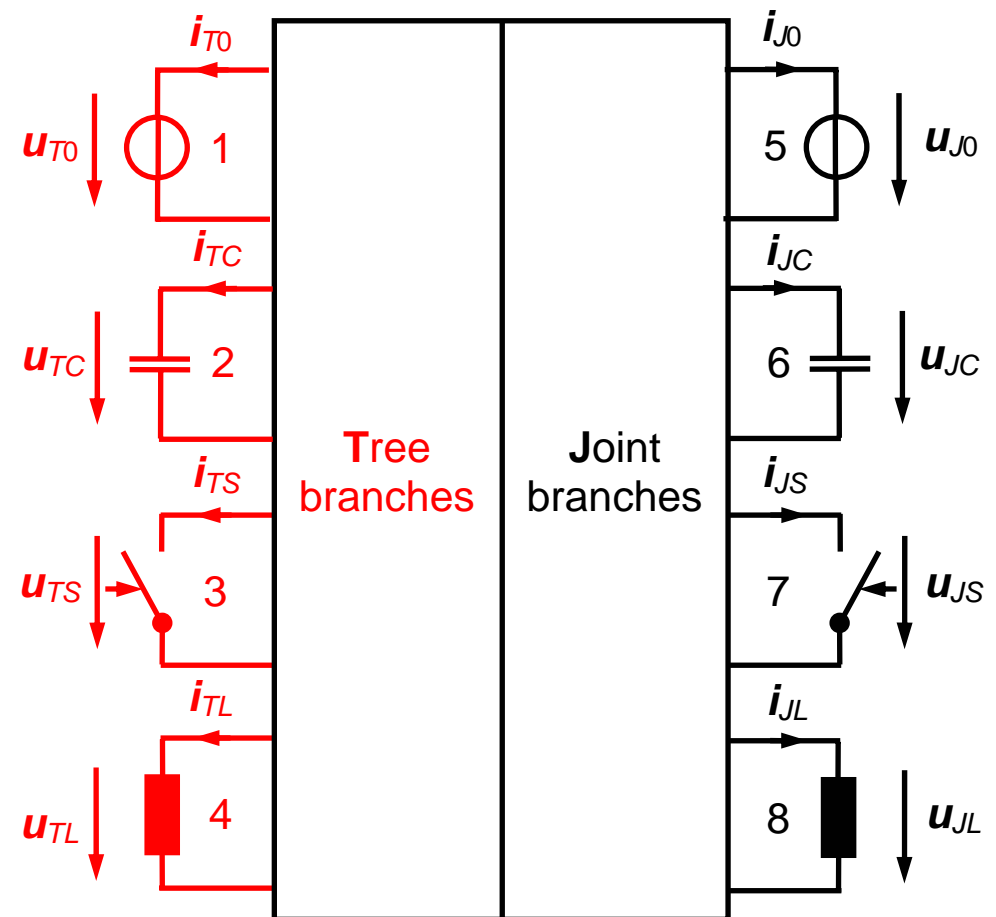
$$\underbrace{\begin{pmatrix} I_{T0} & 0 & 0 & 0 & F_{J00} & F_{J0C} & F_{J0S} & F_{J0L} \\ 0 & I_{TC} & 0 & 0 & 0 & F_{JCC} & F_{JCS} & F_{JCL} \\ 0 & 0 & I_{TS} & 0 & 0 & 0 & F_{JSS} & F_{JSL} \\ 0 & 0 & 0 & I_{TL} & 0 & 0 & 0 & F_{JLL} \end{pmatrix}}_{(I_T D_J)} \begin{pmatrix} i_{T0} \\ i_{TC} \\ i_{TS} \\ i_{TL} \\ i_{J0} \\ i_{JC} \\ i_{JS} \\ i_{JL} \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

$\underbrace{\quad}_{(i_T)}$ $\underbrace{\quad}_{(i_J)}$

Fundamental loop equations

$$\underbrace{\begin{pmatrix} -F_{J00}^T & 0 & 0 & 0 & I_{J0} & 0 & 0 & 0 \\ -F_{J0C}^T & -F_{JCC}^T & 0 & 0 & 0 & I_{JC} & 0 & 0 \\ -F_{J0S}^T & -F_{JCS}^T & -F_{JSS}^T & 0 & 0 & 0 & I_{JS} & 0 \\ -F_{J0L}^T & -F_{JCL}^T & -F_{JSL}^T & -F_{JLL}^T & 0 & 0 & 0 & I_{JL} \end{pmatrix}}_{(B_T I_J)} \begin{pmatrix} u_{T0} \\ u_{TC} \\ u_{TS} \\ u_{TL} \\ u_{J0} \\ u_{JC} \\ u_{JS} \\ u_{JL} \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

$\underbrace{\quad}_{(u_T)}$ $\underbrace{\quad}_{(u_J)}$



Element characteristics

$$i_{TC} = C_T \frac{d}{dt} u_{TC} \quad i_{JC} = C_J \frac{d}{dt} u_{JC}$$

$$u_{JL} = L_J \frac{d}{dt} i_{JL} \quad u_{TL} = L_T \frac{d}{dt} i_{TL}$$