

# Метод контурных токов

$$ORIGIN := 1$$

$$j := \sqrt{-1}$$

$$Z := \begin{bmatrix} 69 - 33j \\ 59 \\ -56j \\ 31j \\ 24j \\ 21 \\ -18j \\ 92 \end{bmatrix} \quad E := \begin{bmatrix} 0 \\ 0 \\ 58 \cdot e^{j \cdot 132^\circ} \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$$

$$ZD := \text{diag}(Z) \quad G := \frac{1}{ZD} \quad ZD = \begin{bmatrix} 69 - 33j & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 59 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -56j & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 31j & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 24j & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 21 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -18j & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 92 \end{bmatrix}$$

$$A := \begin{bmatrix} 0 & 0 & 0 & 0 & -1 & 1 & 0 & 0 \\ 0 & -1 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & -1 & 1 & 0 & -1 & 0 \\ 0 & 0 & -1 & 1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & -1 & 0 & -1 \end{bmatrix} \quad B := \begin{bmatrix} 1 & 1 & 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 & 0 & 0 & -1 & 0 \\ 0 & 0 & 1 & 1 & 1 & 1 & 0 & -1 \end{bmatrix}$$

$$IK := (B \cdot ZD \cdot B^T)^{-1} \cdot (B \cdot E)$$

$$IK = \begin{bmatrix} 0.069 + 0.21j \\ -0.776 - 0.153j \\ -0.256 + 0.378j \end{bmatrix}$$

$$IZ := B^T \cdot IK \quad IZ = \begin{bmatrix} 0.069 + 0.21j \\ -0.706 + 0.056j \\ -1.032 + 0.225j \\ -1.032 + 0.225j \\ -0.256 + 0.378j \\ -0.256 + 0.378j \\ 0.776 + 0.153j \\ 0.326 - 0.169j \end{bmatrix}$$