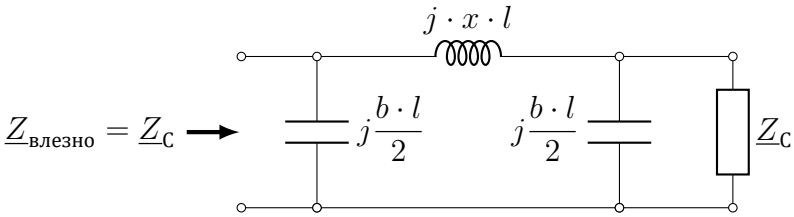
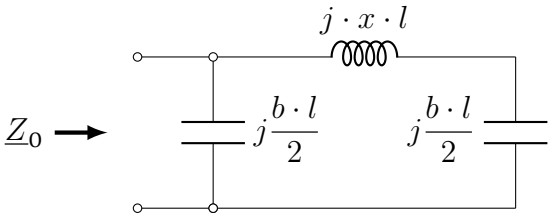
1 Карактеристична импеданција на вод

1.1 Дефиниција на карактеристичната импеданција



1.2 Отворено коло

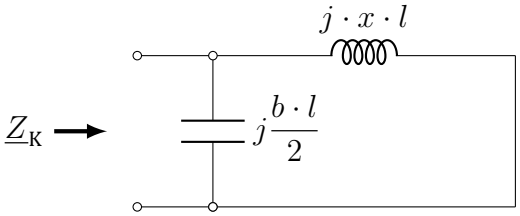


$$\underline{Z}_{\text{X}} = j \cdot x \cdot l, \quad \underline{Z}_{\text{B}} = \frac{1}{j \cdot b \cdot l/2} = -j\frac{2}{b \cdot l}$$

$$\underline{Z}_{\text{O}} = (\underline{Z}_X + \underline{Z}_B) \parallel \underline{Z}_B = \frac{(\underline{Z}_X + \underline{Z}_B) \cdot \underline{Z}_B}{\underline{Z}_X + \underline{Z}_B + \underline{Z}_B}$$

$$\underline{Z}_{\text{O}} = -j\frac{4 - 2 \cdot b \cdot x \cdot l^2}{b \cdot l \cdot (4 - b \cdot x \cdot l^2)}$$

1.3 Кусоврзано коло



$$\underline{Z}_{\text{K}} = \underline{Z}_X \parallel \underline{Z}_B = \frac{\underline{Z}_X \cdot \underline{Z}_B}{\underline{Z}_X + \underline{Z}_B}$$

$$\underline{Z}_{\text{K}} = j\frac{2 \cdot x \cdot l}{2 - b \cdot x \cdot l^2}$$

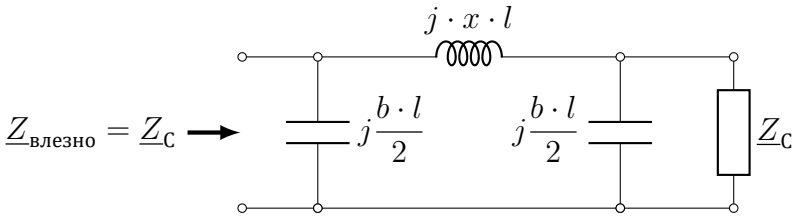
1.4 Пресметка на карактеристичната импеданција

$$\underline{Z}_{\text{C}} = \sqrt{\underline{Z}_{\text{O}} \cdot \underline{Z}_{\text{K}}}$$

$$\underline{Z}_{\text{C}} = 2 \cdot \sqrt{\frac{x}{4b - b^2 \cdot x \cdot l^2}}, \quad b^2 \cdot x \cdot l^2 \approx 0, \quad \underline{Z}_{\text{C}} = \sqrt{\frac{x}{b}}$$

$$x = 0,399\,\Omega/\text{km}; \quad b = 2,84 \cdot 10^{-6}\,\text{S/km}; \quad l = 50\,\text{km}$$

$$\underline{Z}_{\text{C}} = \sqrt{\frac{0,399}{2,84 \cdot 10^{-6}}} = 374,8239\,\Omega$$



$$\underline{Z}_{\text{X}} = j \cdot x \cdot l = j19,95\,\Omega \quad \underline{Z}_{\text{B}} = -j\frac{2}{b \cdot l} = -j1,4085 \cdot 10^{4}\,\Omega$$

$$\underline{Z}_{\text{влезно}} = (\underline{Z}_{\text{B}} \parallel \underline{Z}_{\text{C}} + \underline{Z}_{\text{X}}) \parallel \underline{Z}_{\text{B}} = (374,8247 + j0,0141)\,\Omega$$