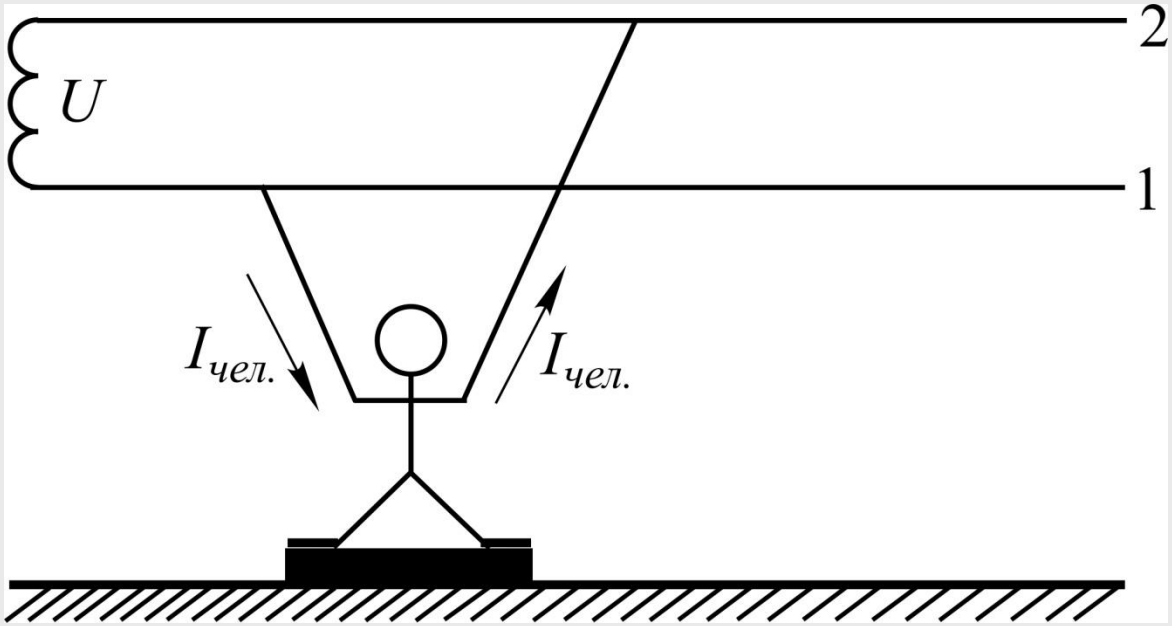
Анализ опасности поражения током в различных электрических сетях

Глазырин М.А.

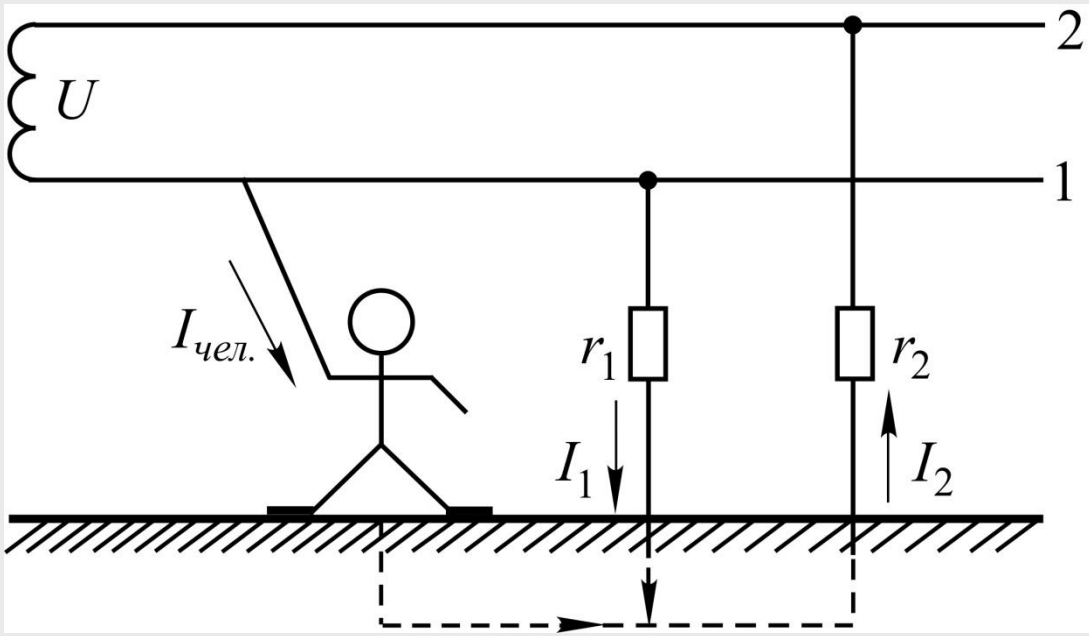
Двухфазное прикосновение

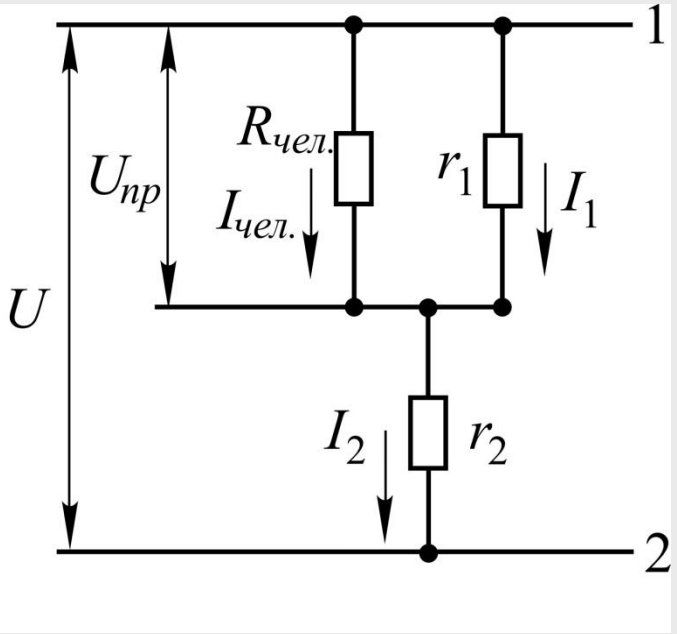


$$I_{÷åë.} = \frac{U_{ë}}{R_{÷åë.}} = \frac{U_{ô}\sqrt{3}}{R_{÷åë.}}$$

$$I_{÷åë.} = \frac{U}{R_{÷åë.}}$$

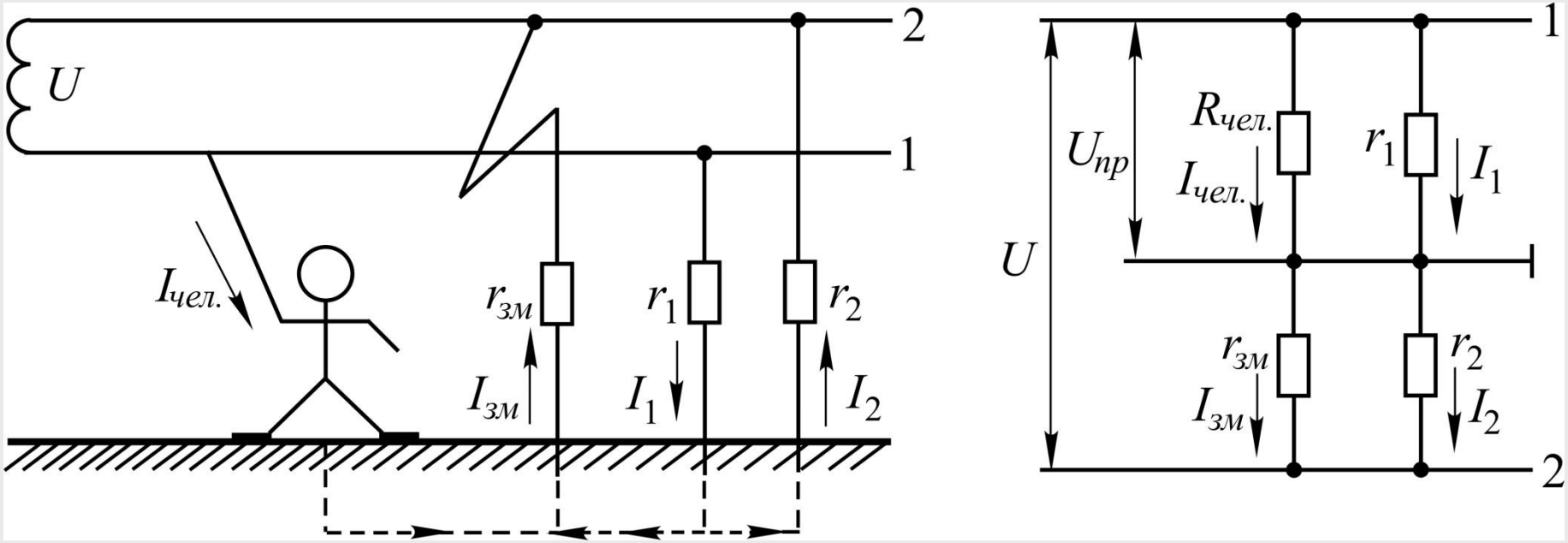
Однофазное прикосновение





$$I_{\div åë.} = \frac{U_{ï ð}}{R_{\div åë.}} = \frac{U \cdot r_1}{r_1 \cdot r_2 + r_1 \cdot R_{\div åë.} + r_2 \cdot R_{\div åë.}}$$

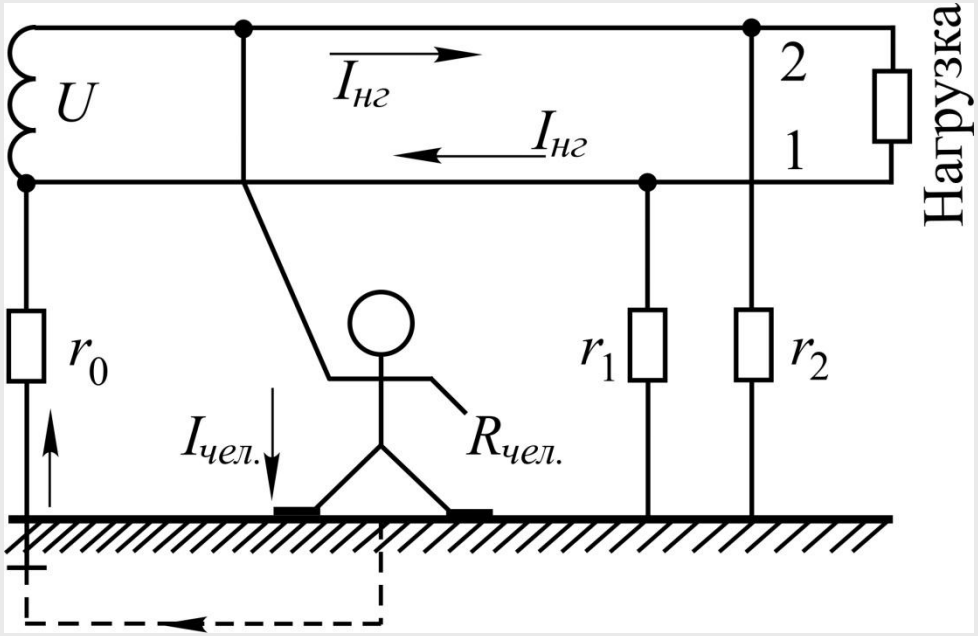
Однофазное прикосновение



$$I_{\div åë.} = \frac{U_{ï ð}}{R_{\div åë.}} = \frac{U \cdot r_1}{r_1 \cdot r_{2Ý} + r_1 \cdot R_{\div åë.} + r_{2Ý} \cdot R_{\div åë.}}$$

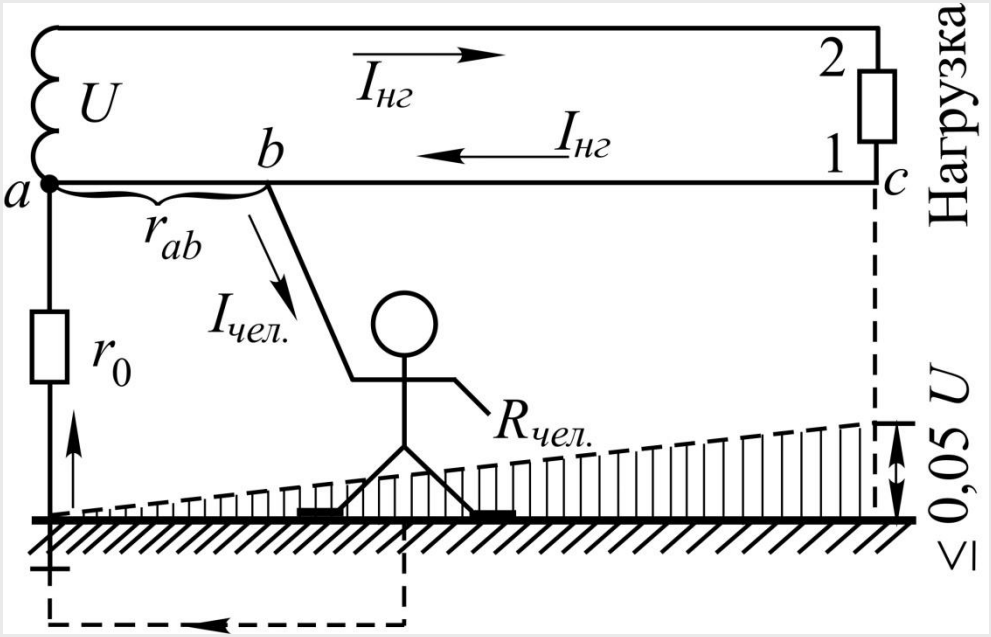
$$I_{\div åë.} \approx \frac{U}{R_{\div åë.}}$$

Однофазное прикосновение



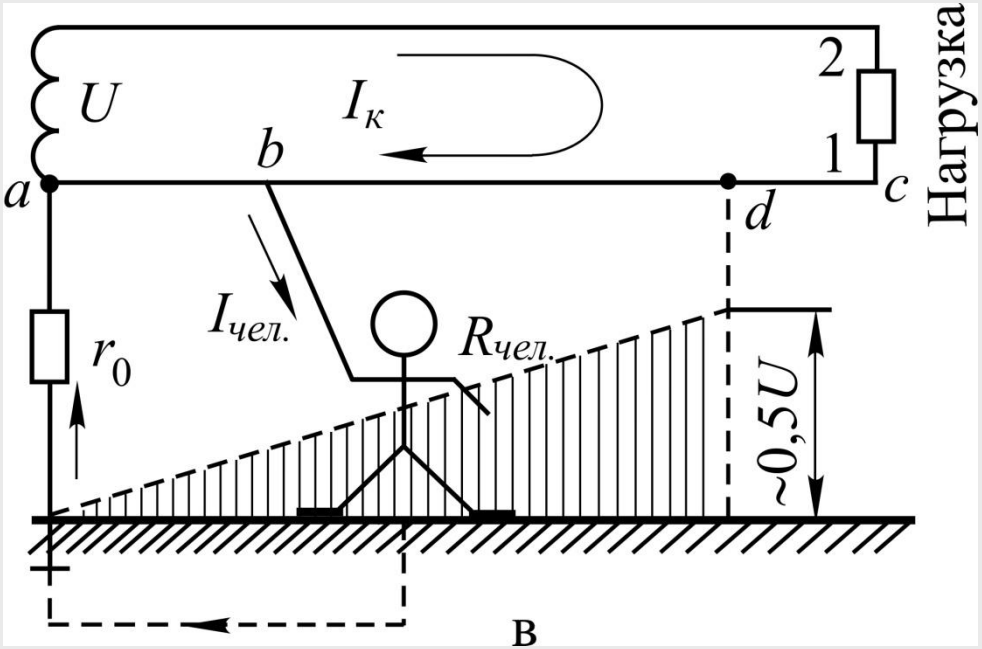
$$I_{÷åë.} = \frac{U}{R_{÷åë.} + r_0} \qquad I_{÷åë.} = \frac{U}{R_{÷åë.} + r_{ï} + r_{î á} + r_0}$$

Однофазное прикосновение



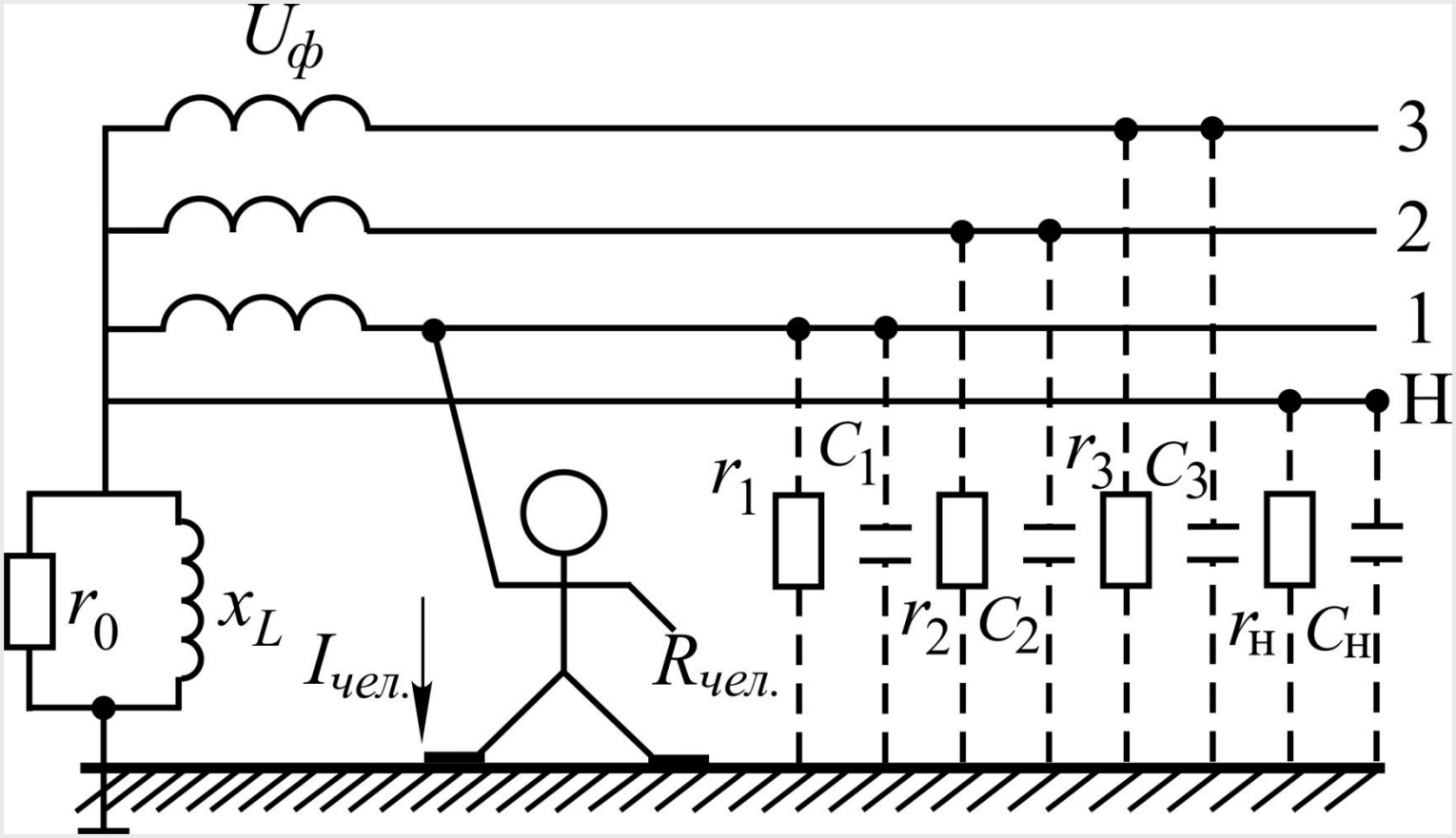
$$I_{÷åë.} = \frac{U_{ab}}{R_{÷åë.} + r_0} \qquad I_{÷åë.} = \frac{U_{ab}}{R_{÷åë.} + r_{ï} + r_{î á} + r_0}$$

Однофазное прикосновение



$$I_{÷åë.} = \frac{U_{ab}}{R_{÷åë.} + r_0} \qquad I_{÷åë.} = \frac{U_{ab}}{R_{÷åë.} + r_{ï} + r_{î á} + r_0}$$

Однофазное прикосновение



$$\dot{I}_{\div åë.} = \dot{U}_{ï ð} \underline{Y}_{\div åë.} = U_{ô} \underline{Y}_{\div åë.} \frac{\underline{Y}_2\left(1-a^2\right)+\underline{Y}_3\left(1-a\right)+\underline{Y}_{í}+\underline{Y}_0}{\underline{Y}_1+\underline{Y}_2+\underline{Y}_3+\underline{Y}_{í}+\underline{Y}_0+\underline{Y}_{\div åë.}}$$

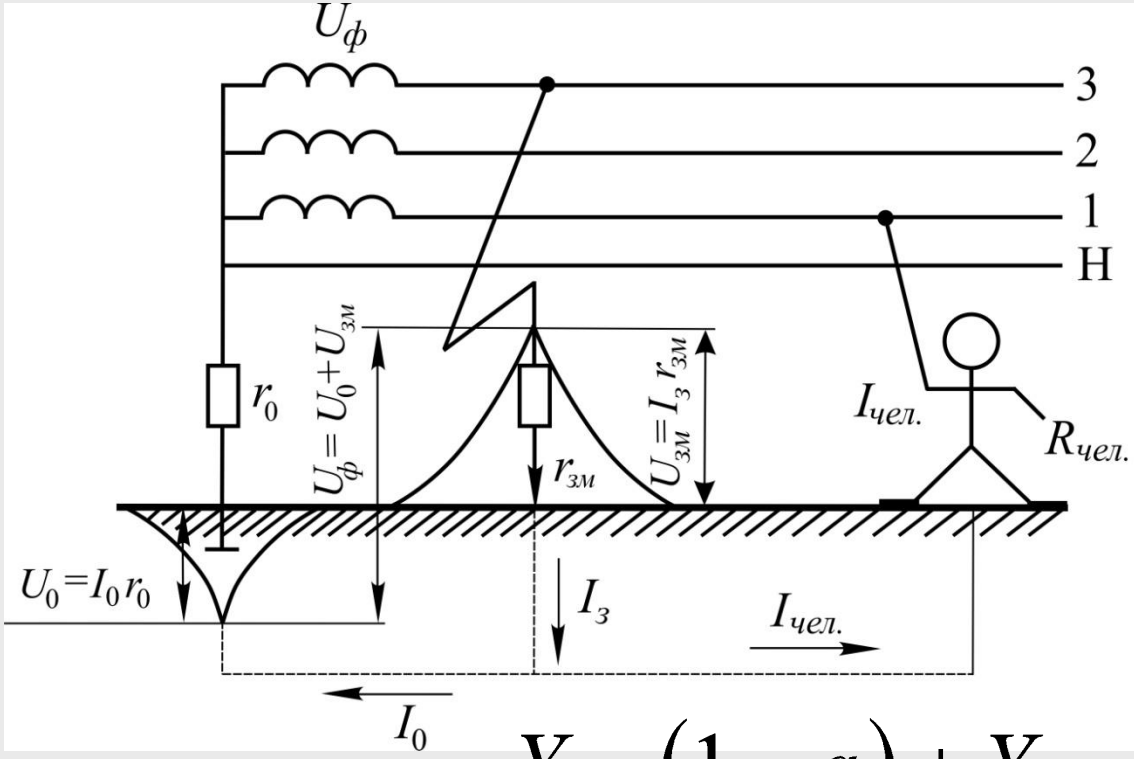
Однофазное прикосновение

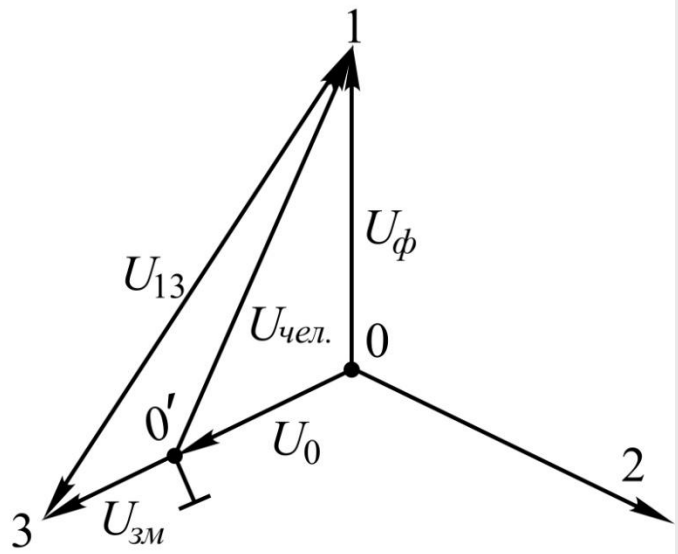
$$\underline{Y}_0 = \frac{1}{r_0}$$

$$\underline{Y}_1 = \underline{Y}_2 = \underline{Y}_3 = \underline{Y}_{\acute{\imath}} \approx 0$$

$$I_{\div \mathring{a}\ddot{e}.} = \frac{U_{\hat{o}}}{R_{\div \mathring{a}\ddot{e}.} + r_0}$$

Однофазное прикосновение





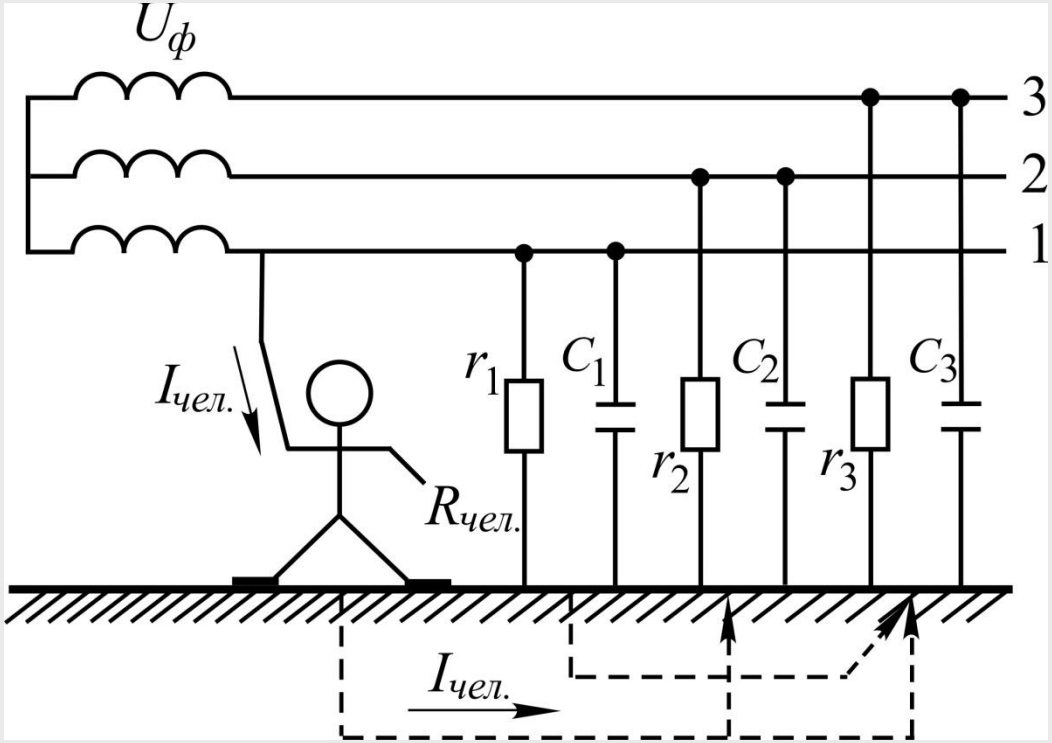
$$I_{\div åë.} = U_{ô}\,\underline{Y}_{\div åë.}\,\frac{\underline{Y}_{çì}\,(1-a)+\underline{Y}_0}{\underline{Y}_{çì}+\underline{Y}_0+\underline{Y}_{\div åë.}}$$

$$I_{\div åë.} = U_{ô}\,\frac{r_{çì}+r_0\sqrt{3}}{r_{çì}\,r_0+R_{\div åë.}\left(r_{çì}+r_0\right)}$$

Однофазное прикосновение

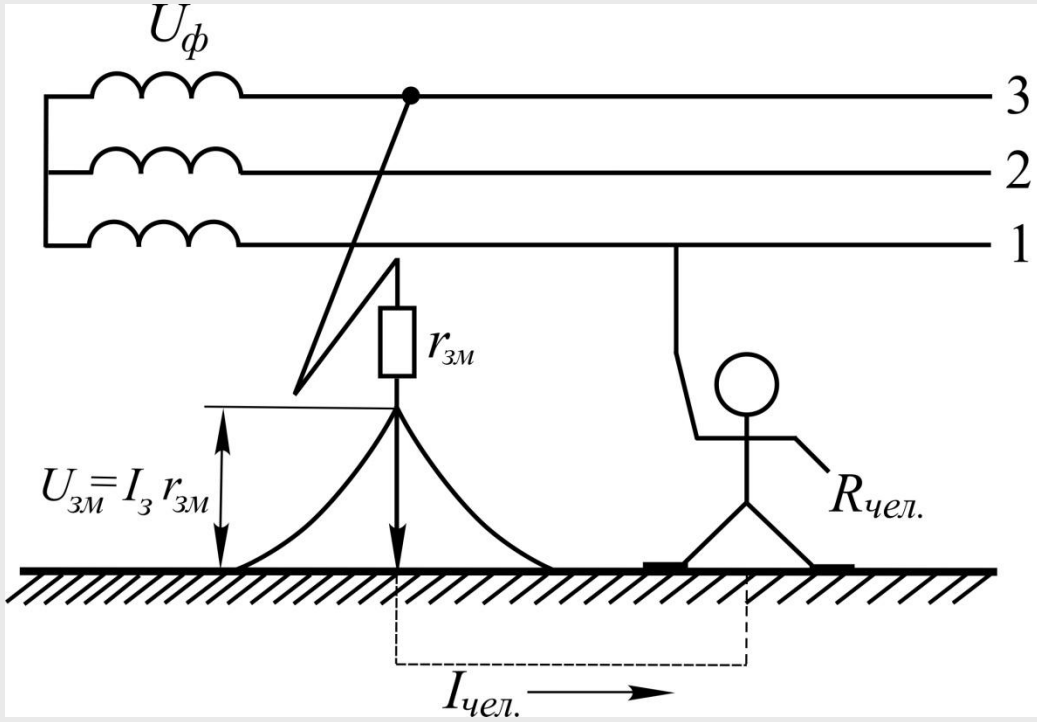
$$I_{÷åë.} = \frac{U_{ô}}{R_{÷åë.} + \underline{Z} / 3}$$

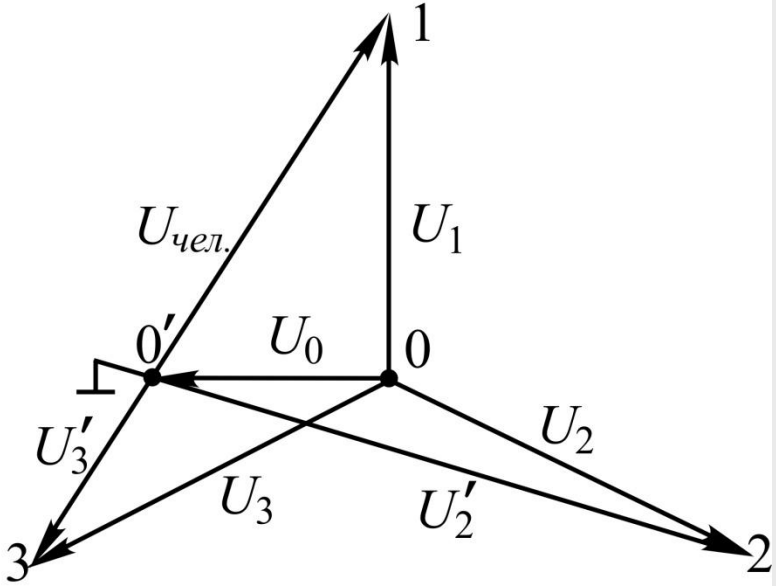
$$I_{÷åë.} = \frac{U_{ô}}{R_{÷åë.} + r / 3}$$



$$I_{÷åë.} = \frac{U_{ô}}{\sqrt{9R_{÷åë.}^2\omega^2C^2 + 1}} = \frac{U_{ô}}{\sqrt{R_{÷åë.}^2 + \left(\frac{\tilde{o}_{\tilde{N}}}{3}\right)^2}}$$

Однофазное прикосновение





$$I_{÷åë.} = \frac{U_{ô}\sqrt{3}}{R_{÷åë.} + r_{çì}}$$

$$\underline{I}_{÷åë.} = U_{ô}\,\underline{Y}_{÷åë.}\,\frac{\underline{Y}_3(1-a)}{\underline{Y}_3 + \underline{Y}_{÷åë.}}$$

$$I_{÷åë.} \approx \frac{U_{ô}\sqrt{3}}{R_{÷åë.}}$$