fázové proudy:

$$\bar{I}_{UV} = \frac{\bar{U}_{UV}}{\bar{Z}_U}$$

$$\bar{I}_{VW} = \frac{\bar{U}_{VW}}{\bar{Z}_V}$$

$$\bar{I}_{WU} = \frac{\bar{U}_{WU}}{\bar{Z}_W}$$

síťové proudy (z 1. kirchhoffova zákona pro uzly U, V, W)

1. k. z: U: $-\bar{I}_U - \bar{I}_{WU} + \bar{I}_{UV} = 0 \Rightarrow \bar{I}_U = \bar{I}_{UV} - \bar{I}_{WU}$

1. k. z: V: $-\bar{I}_V - \bar{I}_{UV} + \bar{I}_{VW} = 0 \Rightarrow \bar{I}_V = \bar{I}_{VW} - \bar{I}_{UV}$

1. k. z: W: $-\bar{I}_W - \bar{I}_{VW} + \bar{I}_{WU} = 0 \Rightarrow \bar{I}_W = \bar{I}_{WU} - \bar{I}_{VW}$

a) fázové proudy:

$$\bar{I}_{UV} = \frac{\bar{U}_{UV}}{\bar{Z}_U} = \frac{230\sqrt{3}\angle 30°}{100\angle -90°} = \frac{400\angle 30°}{100\angle -90°} = \underline{\underline{4\angle 120°\ A}}$$

$$\bar{I}_{VW} = \frac{\bar{U}_{VW}}{\bar{Z}_V} = \frac{230\sqrt{3}\angle -90°}{100\angle -90°} = \frac{400\angle -90°}{100\angle -90°} = \underline{\underline{4\angle 0°\ A}}$$

proudy jsou souměrné

$$\bar{I}_{WU} = \frac{\bar{U}_{WU}}{\bar{Z}_W} = \frac{230\sqrt{3}\angle 150°}{100\angle -90°} = \frac{400\angle 150°}{100\angle -90°} = 4\angle 240° = \underline{\underline{4\angle -120°\ A}}$$

síťové proudy

$$\bar{I}_U = \bar{I}_{UV} - \bar{I}_{WU} = 4\angle 120° - 4\angle -120° = 4\left(-\tfrac{1}{2} + \tfrac{\sqrt{3}}{2}j\right) - 4\left(-\tfrac{1}{2} - \tfrac{\sqrt{3}}{2}j\right) =$$

$$= -2 + 2\sqrt{3}j + 2 + 2\sqrt{3}j = 4\sqrt{3}j \doteq 6{,}9j = \underline{\underline{6{,}9\angle 90°\ A}}$$

$$\bar{I}_V = \bar{I}_{VW} - \bar{I}_{UV} = 4\angle 0° - 4\angle 120° = 4 - 4\left(-\tfrac{1}{2} + \tfrac{\sqrt{3}}{2}j\right) = 4 + 2 - 2\sqrt{3}j = 6 - 2\sqrt{3}j =$$

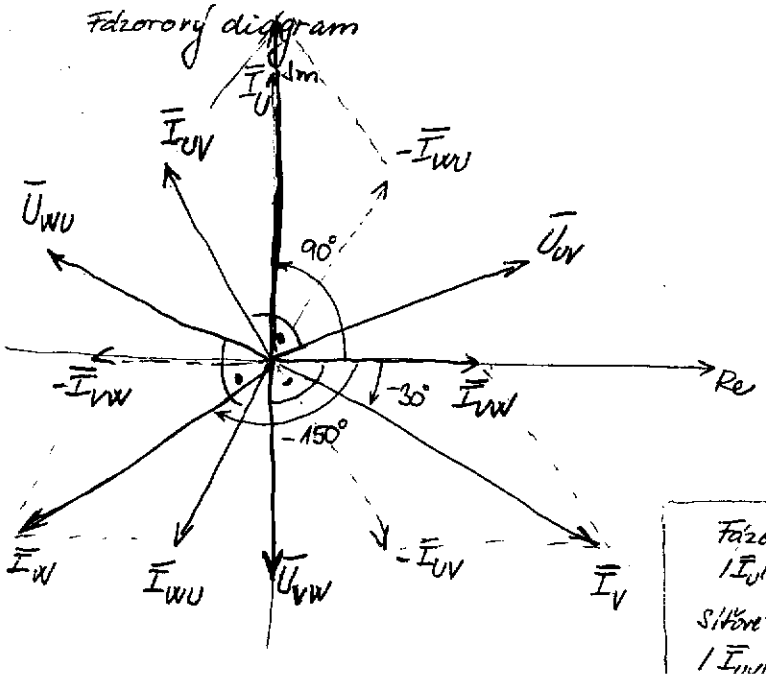
$$= 4\left(\tfrac{3}{2} - \tfrac{\sqrt{3}}{2}j\right) = 4\sqrt{\left(\tfrac{3}{2}\right)^2 + \left(-\tfrac{\sqrt{3}}{2}\right)^2}\ \Big/ \operatorname{arccotg}\tfrac{-\sqrt{3}}{3} = 4\sqrt{3}\angle -30°\ A \doteq 6{,}9\angle -30°\ A$$

$$\bar{I}_W = \bar{I}_{WU} - \bar{I}_{VW} = 4\angle -120° - 4 = 4\left(-\tfrac{1}{2} - \tfrac{\sqrt{3}}{2}j\right) - 4 = 4\left(-\tfrac{1}{2} - \tfrac{\sqrt{3}}{2}j - 1\right) = 4\left(-\tfrac{3}{2} - \tfrac{\sqrt{3}}{2}j\right)$$

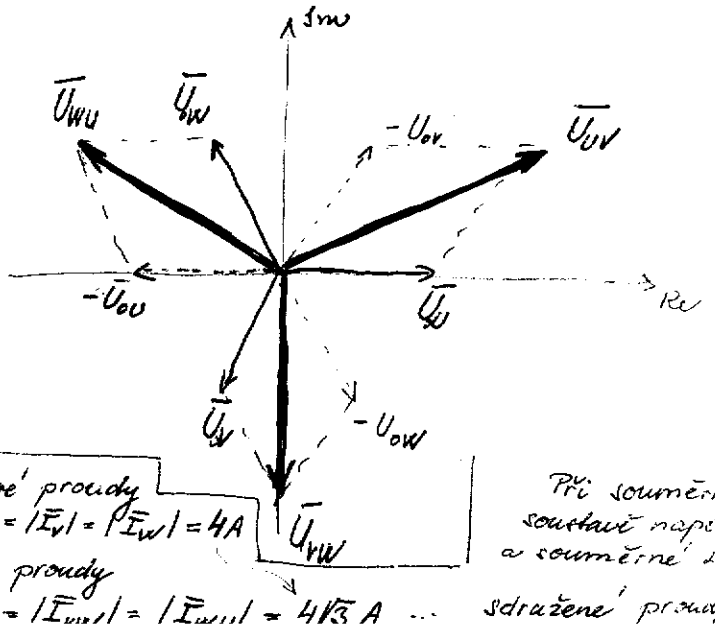
$$= 4\sqrt{\left(-\tfrac{3}{2}\right)^2 + \left(\tfrac{\sqrt{3}}{2}\right)^2}\ \Big/ \operatorname{arccotg}\tfrac{(-\sqrt{3})}{(-3)} = 4\sqrt{3}\angle -150°\ A \doteq 6{,}9\angle -150°\ A$$

Platí $\bar{I}_U + \bar{I}_V + \bar{I}_W = 0$ (1. k. z. pro uzel 0)

Fázorový diagram



Fázorový diagram (napětí)



Fázové proudy $|\bar{I}_U| = |\bar{I}_V| = |\bar{I}_W| = 4A$

Síťové proudy $|\bar{I}_{UV}| = |\bar{I}_{VW}| = |\bar{I}_{WU}| = 4\sqrt{3}\ A$ ... sdružené proudy

Při souměrné soustavě napětí a souměrné zátěži