Current divider single IEC source

Current divider

Current law is not valid since the current divider is complex…

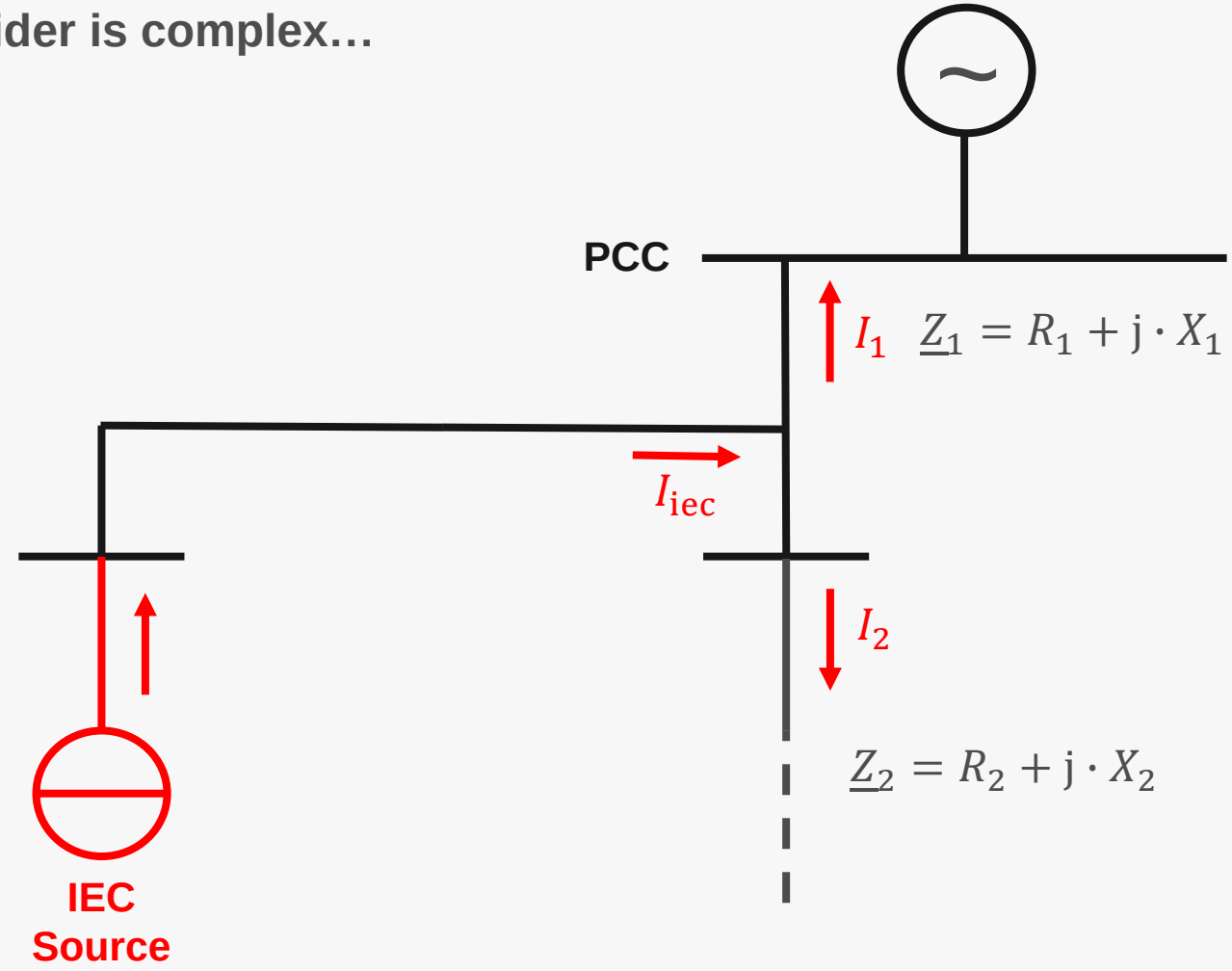
$$I_{\text{iec}} \neq I_1 + I_2$$

$$\left.\begin{aligned} \underline{I}_1 &= I_{\text{iec}} \cdot \frac{\underline{Z}_1}{\underline{Z}_1 || \underline{Z}_2} \\ \underline{I}_2 &= I_{\text{iec}} \cdot \frac{\underline{Z}_2}{\underline{Z}_1 || \underline{Z}_2} \end{aligned}\right\} \quad I_{\text{iec}} = \left|\underline{I}_1 + \underline{I}_2\right|$$

… but the angle information gets discarded afterwards

$$I_1 = \left|\underline{I}_1\right| \qquad I_2 = \left|\underline{I}_2\right|$$

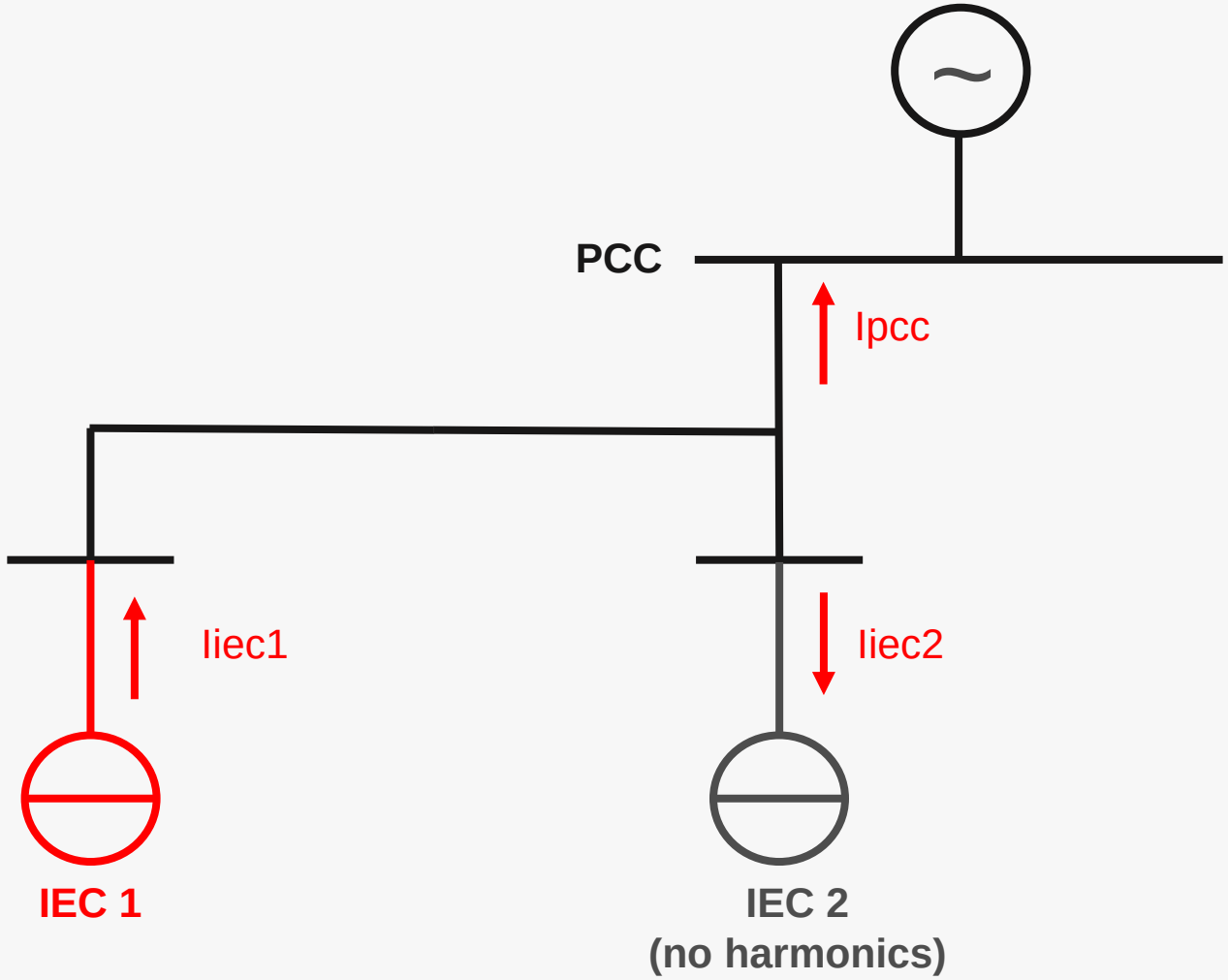
$$I_{\text{iec}} = \left|\underline{I}_1 + \underline{I}_2\right| \neq \left|\underline{I}_1\right| + \left|\underline{I}_2\right| = I_1 + I_2$$



Summation law with multiple IEC sources

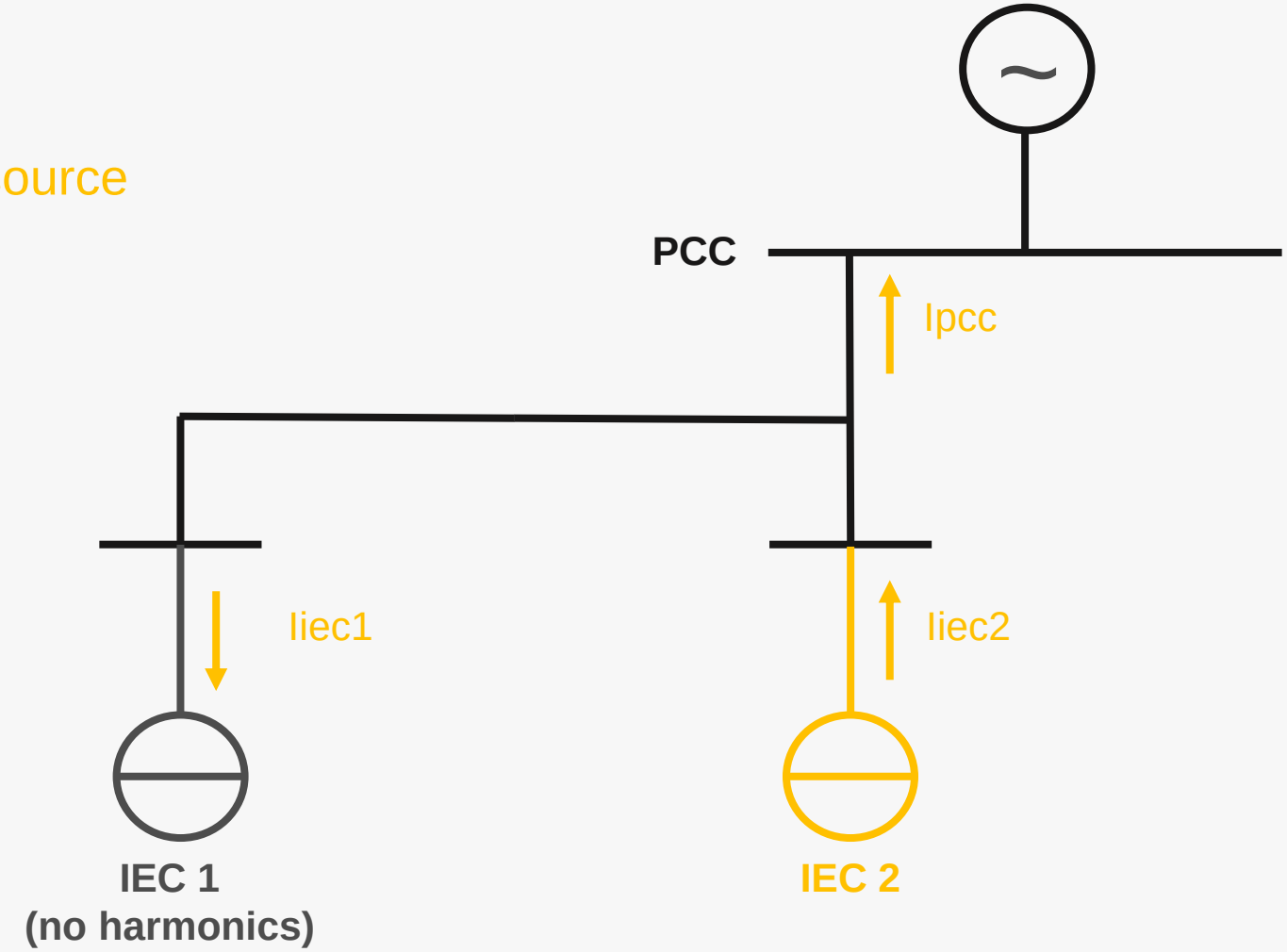
Summation law with multiple IEC sources

1st calculation with only the first IEC source



Summation law with multiple IEC sources

2nd calculation with only the second IEC source

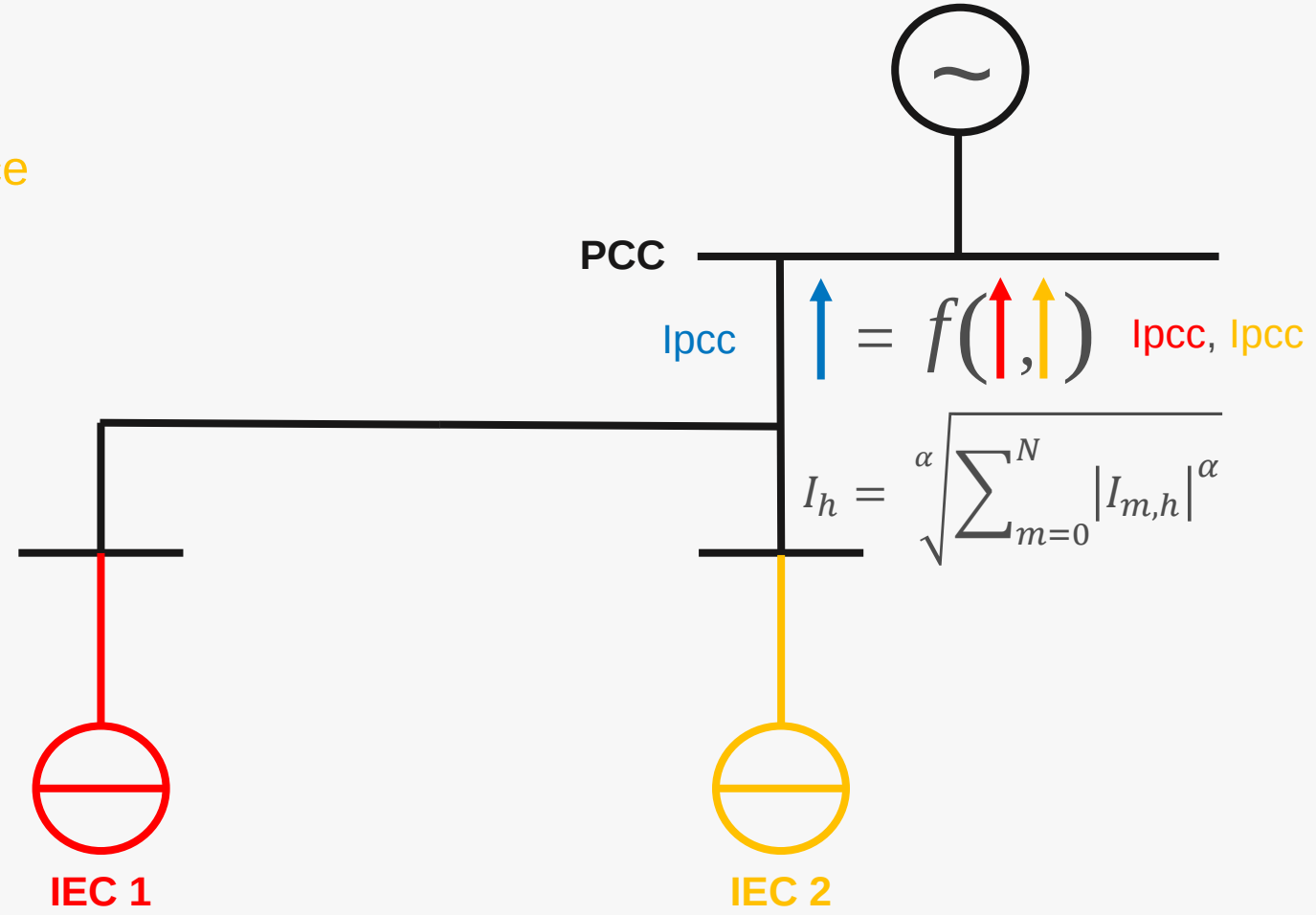


Summation law with multiple IEC sources

1st calculation with only the first IEC source

2nd calculation with only the second IEC source

Summation Law



Mix of phase correct and IEC sources

Phase correct and IEC sources

1st calculation with only, but ALL phase correct sources (Complex Summation)

2nd calculation with only the first IEC source

3rd calculation with only the second IEC source

→ **Sum up ALL individual harmonic currents and voltages of each calculation at all buses according to summation law**

$$I_h = \sqrt[\alpha]{\sum_{m=0}^{N} |I_{m,h}|^{\alpha}}$$

$$\uparrow = f(\uparrow,\uparrow,\uparrow)$$