

Übung

s A

"1.1 " newline

$$\text{alignl } U(t) = \hat{U} \cdot \sin(\omega \cdot t) \quad "$$

$$\hat{U} = U_m$$

newline

$$\text{alignl } U(t) = 3,0\text{V} \cdot \sin(2\pi \cdot 10^3 \text{ 1 over s} \cdot t)$$

newline

$$\text{alignl } R = \hat{U} \text{ over } \hat{I} \quad " \Rightarrow \quad " \hat{I} = \hat{U} \text{ over } R$$

$$= \hat{U} \text{ over } X_L = \hat{U} \text{ over } \omega \cdot L$$

$$\text{newline } " \text{mit } " L = \mu_0 \cdot A \cdot \{N^2 \text{ over } l\} = 4\pi \cdot 10^{-7} \text{ Vs over Am} \cdot (0,020\text{m})^2 \cdot \pi \cdot 10^6 \cdot \{1 \text{ over } 1,60\text{m}\}$$

newline

$$\text{alignl } L = 9,9 \cdot 10^{-4} \text{ Vs over A} \quad \text{newline}$$

$$\text{alignl } I(t) = \hat{I} \cdot \sin(\omega \cdot t - \pi \text{ over } 2) = 3,0\text{V over } \{2\pi \cdot 10^3 \text{ 1 over s} \cdot 9,9 \cdot 10^{-4} \text{ Vs over A}\} \cdot \sin(2\pi \cdot 10^3 \text{ 1 over s} \cdot t - \pi \text{ over } 2) \quad \text{newline}$$

$$\text{alignl } I(t) = 0,48 \text{ A} \cdot \sin(2\pi \cdot 10^3 \text{ 1 over s} \cdot t - \pi \text{ over } 2)$$

$$\text{newline alignl } I(t) = -0,48\text{A} \cdot \text{Cos}(2\pi \cdot 10^3 \text{ 1 over s} \cdot t)$$

newline newline

alignc "< Diagramm >" newline newline

alignl "1.2 Feld abbau: " 0 - 1 over 4T " ; " 1 over 2T - 3 over 2 T newline

$$"1.4 " E_m = 1 \text{ over } 2 \cdot L \cdot \hat{I}^2$$

$$\text{newline alignl } E_{\text{magnet.max}} = 1 \text{ over } 2 \cdot 9,9 \cdot 10^{-4} \text{ Vs over A} \cdot (0,48\text{A})^2 = 1,14 \cdot 10^{-4} \text{ VsA} \quad " = "1,1 \cdot 10^{-4}$$

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