

# task\_ezrkjzifcegttcpc\_with\_calculation

## Student Group

First Name	Surname	Matrikel Nr.

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resonance, resonant circuit, RMS, exam ee2 SS2021

### Exercise E1 Resonant Circuit (written test, approx. 4 % of a 120-minute written test, SS2021)

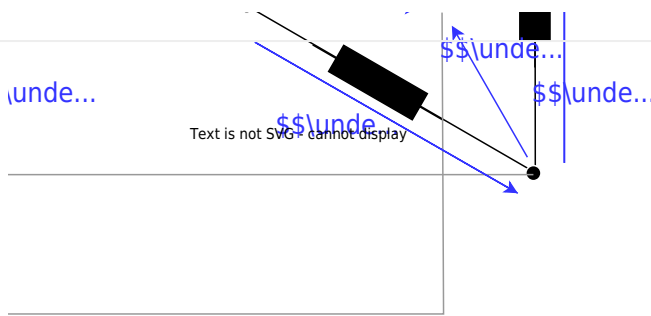
Specify the RMS value of the phase voltage  $U_{\text{ph}}$  based on the string voltage  $U_{\text{str}}$ .  
Results be considered in the following.

A voltage with the RMS value  $U_{\text{RMS}} = 110 \text{ V}$  is applied between the terminals of each winding.

Through each of the windings, there is a current with an RMS value  $I_{\text{RMS}} = 5 \text{ A}$  and  $\varphi = 205.5 \text{ Hz}$  compared to the voltage.

Draw the circuit diagram.  $U_{\text{str}} = 110 \text{ V}$  is applied between the terminals of each winding, this is also the string voltage  $U_{\text{str}}$ .

For delta configuration, the phase voltage  $U_{\text{ph}}$  is equal to the string voltage  $U_{\text{str}}$ .  
With the values:  $f_0 = \frac{1}{2\pi \sqrt{20 \cdot 10^{-3} \cdot 30 \cdot 10^{-6}}} = 205.4681... \text{ Hz}$



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