

3. Linear sources and dipoles

Student Group

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$U_A = f(U_E)$	mit III.	
$U_A = \color{blue}{-U_D} - U_C$	mit II. und I.	$\color{blue}{U_D} = \frac{1}{A_D} \cdot U_A$ $\overset{A_D \rightarrow \infty}{\lim} \rightarrow 0$

Rechnung

$U_A = \color{blue}{-U_D} - U_C$	mit II. und I.	$\color{blue}{U_D} = \frac{1}{A_D} \cdot U_A$ $\overset{A_D \rightarrow \infty}{\lim} \rightarrow 0$
$U_A = \quad \quad 0 \quad - \color{blue}{U_C}$	mit V.	$\color{blue}{U_C} = \frac{1}{C} \cdot \left(\int_{t_0}^{t_1} I_C \, dt + Q_0(t_0) \right)$
$U_A = -\frac{1}{C} \cdot \left(\int_{t_0}^{t_1} \color{blue}{I_C} \, dt + Q_0(t_0) \right)$	mit IV.	$\color{blue}{I_C} = I_R$
$U_A = \color{blue}{-\left(\frac{1}{C} \cdot \int_{t_0}^{t_1} I_R \, dt + Q_0(t_0) \right)}$	Ausklammern	
$U_A = -\frac{1}{C} \cdot \left(\int_{t_0}^{t_1} I_R \, dt - \color{blue}{\frac{Q_0(t_0)}{C}} \right)$	Integrationskonstante betrachten	$\color{blue}{\frac{Q_0(t_0)}{C}} = U_C(t_0) = -U_{A0}$
$U_A = -\frac{1}{C} \cdot \left(\int_{t_0}^{t_1} \color{blue}{I_R} \, dt + U_{A0} \right)$	mit VI. und II.	$\color{blue}{I_R} = \frac{U_R}{R} = \frac{U_E}{R}$
$U_A = -\frac{1}{C} \cdot \left(\int_{t_0}^{t_1} \color{blue}{\frac{1}{R}} \cdot U_E \, dt + U_{A0} \right)$	Konstante vorziehen	
$U_A = -\frac{1}{R \cdot C} \cdot \int_{t_0}^{t_1} U_E \, dt + U_{A0}$		

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