Nodal Analysis
Laboratory I

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1 Nodal analysis - method

$$\begin{bmatrix} G_{AC} & -G_{AB} \\ -G_{AB} & G_{BC} \end{bmatrix} \begin{bmatrix} U_A \\ U_B \end{bmatrix} = \begin{bmatrix} I_A \\ I_B \end{bmatrix}$$
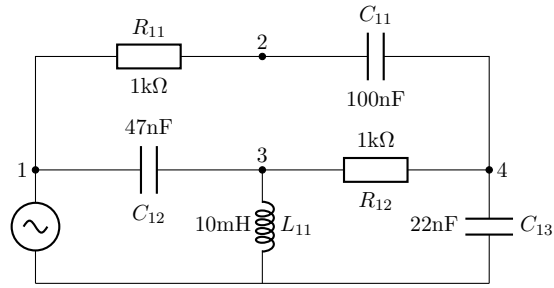
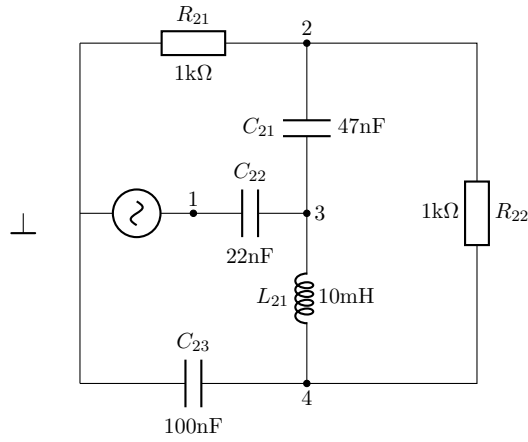# 2 theoretical calculations

Figure 1: theoretical circuit A

Figure 2: theoretical circuit B
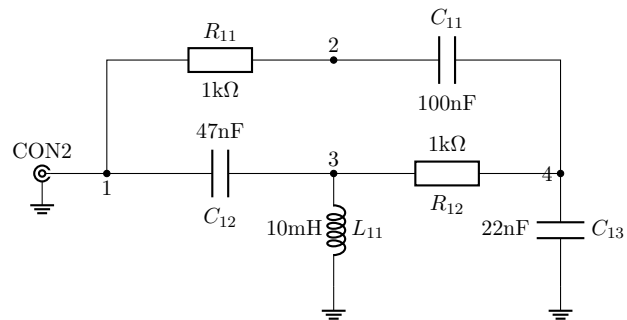
3 real measurements

3.1 Circuit A

Figure 3: circuit A

Circuit A:			
Freq [kHz]:	Channel 1 [V]:	Channel 2 [V]:	Angle[°]:
Node 1:			
1kHz	1.117	1.115	
5kHz	1.122	1.119	
9kHz	1.121	1.119	
Node 2:			
1kHz	1.117	0.830	-19.5
5kHz	1.122	0.338	14.0
9kHz	1.121	1.342	-11.7
Node 3:			
1kHz	1.117	0.043	140,1
5kHz	1.122	0.952	135.0
9kHz	1.121	1.864	28.6
Node 4:			
1kHz	1.117	0.422	37.3
5kHz	1.122	0.493	43.9
9kHz	1.121	1.302	13.6

Table 1: evaluation board measurements for Circuit A

3.2 Circuit B
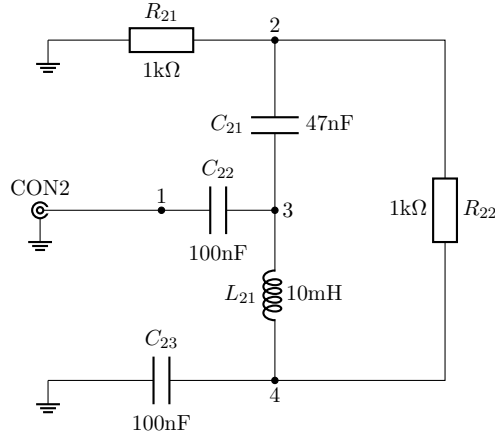
Figure 4: circuit B

Circuit B:			
Freq [kHz]:	Channel 1 [V]:	Channel 2 [V]:	Angle[°]:
Node 1:			
1kHz			
5kHz			
9kHz			
Node 2:			
1kHz	1.117	0.250	28.1
5kHz	1.122	0.245	-42.9
9kHz	1.121	0.921	68.0
Node 3:			
1kHz	1.117	0.486	22.6
5kHz	1.122	0.332	69.0
9kHz	1.121	1.279	24.0
Node 4:			
1kHz	1.117	0.502	20.6
5kHz	1.122	1.077	-13.5
9kHz	1.121	0.503	-114.5

Table 2: evaluation board measurements for Circuit B

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