

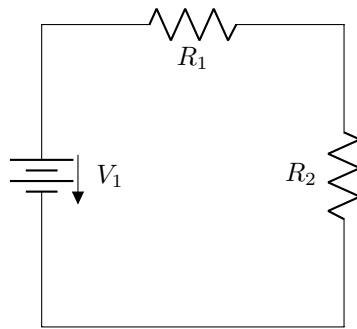
Report

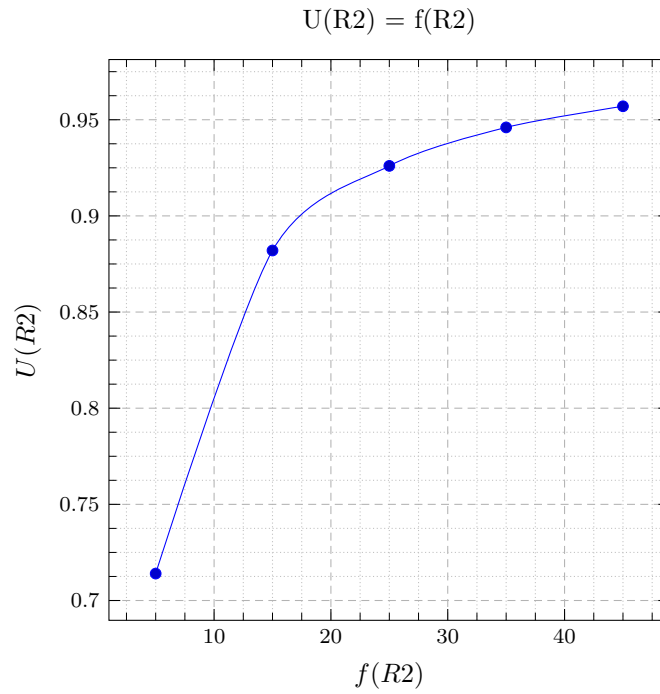
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Chapter 1

Theoretical Part





1.1 Circuit calculation

Calculated the Voltages on the Resistors R_1 and R_2 in DC circuit using Voltage Division Rule.

$$V_{R1} = (V_1 \times R_1) / (R_1 + R_2)$$

$$V_{R2} = (V_1 \times R_2) / (R_1 + R_2)$$

Variable	Value
R_1	2Ω
R_2	6Ω
V_1	1.5V
V_{R2}	1.125V
V_{R1}	0.375V

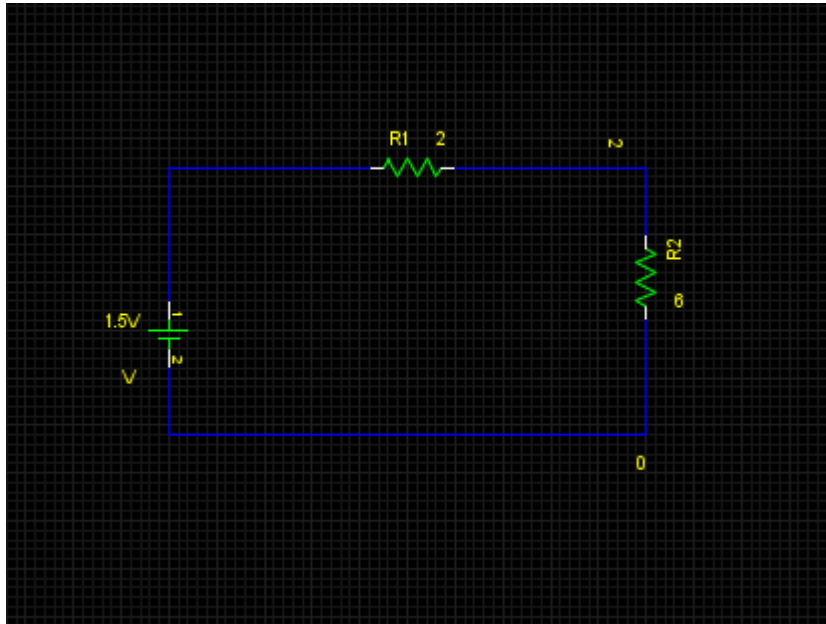
Figure 1.1: Table

Chapter 2

Practicale part

2.1 Work with GEDA programs

2.1.1 Work with gschem



* Spice netlist for gnetlist V1 1 0 0.7V R2 0 2 1 R1 1 2 1 .END

2.1.2 Work with ngspice

This is the picture i got from plotting Connectin "1"

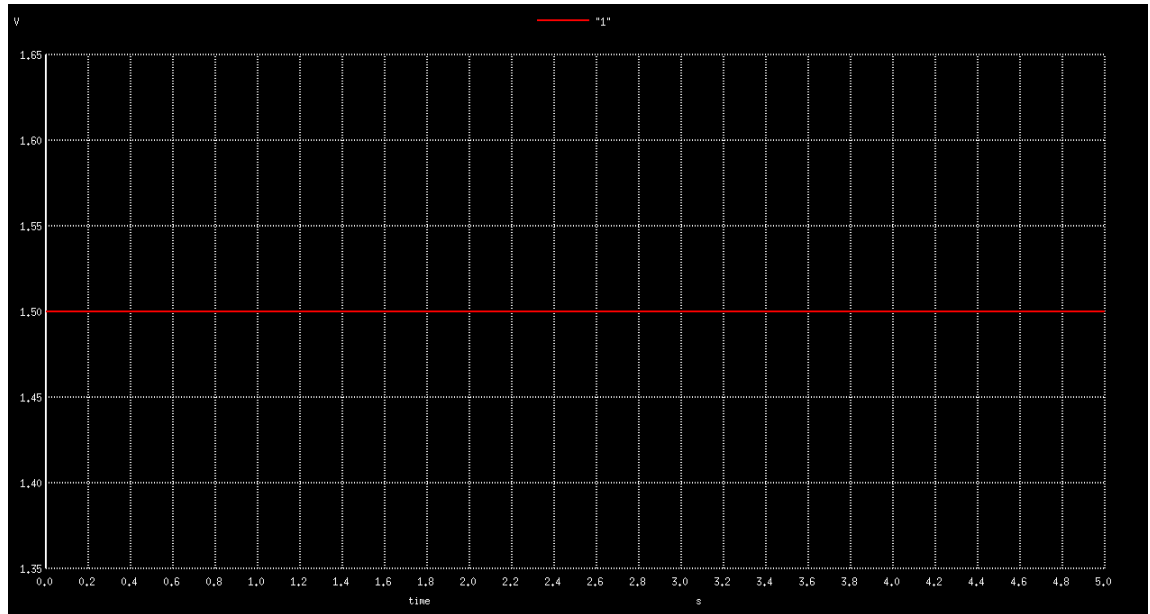


Figure 2.1: 011.png

This is the picture i got from plotting Connectin "2"

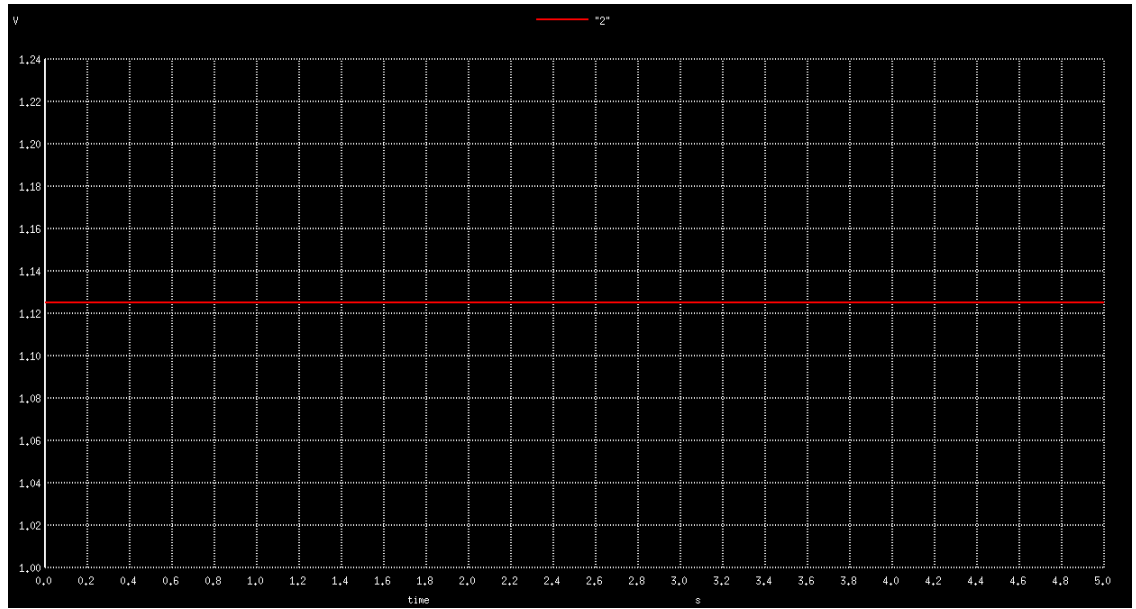


Figure 2.2: 012.png

2.2 work with QUCS programs

I setup a circuit with a graphical user interface (GUI) and simulate the DC signal and noise behaviour of the circuit. After that simulation has finished i viewed the simulation results on a presentation window.

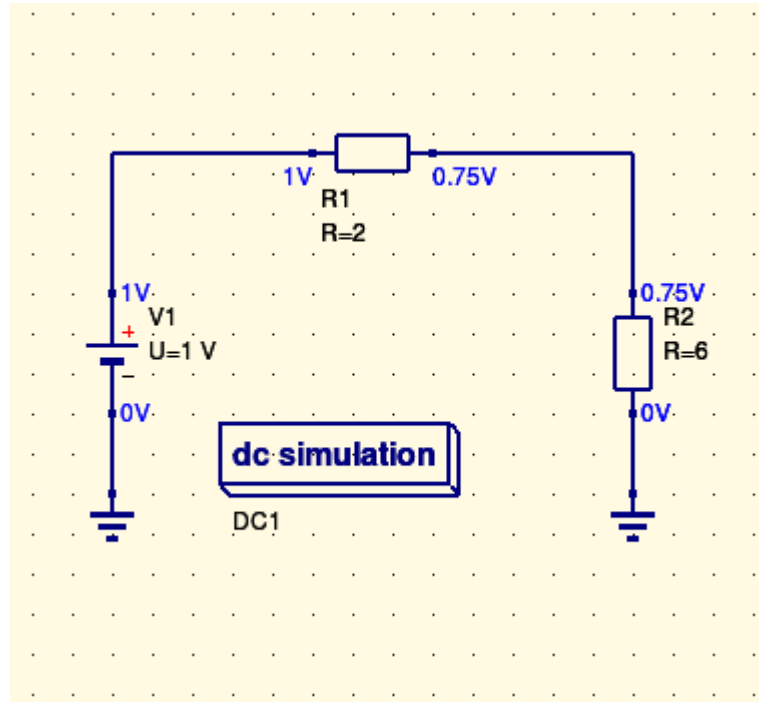


Figure 2.3: The QUCS schematics environment

- Perform elementary DC mode simulation with the F8 key, which results in calculations and determines the voltage on the resistor R2.
- It is shown in the image as 0.35V.
- The simulator variable that derives this value is designated R2.V.

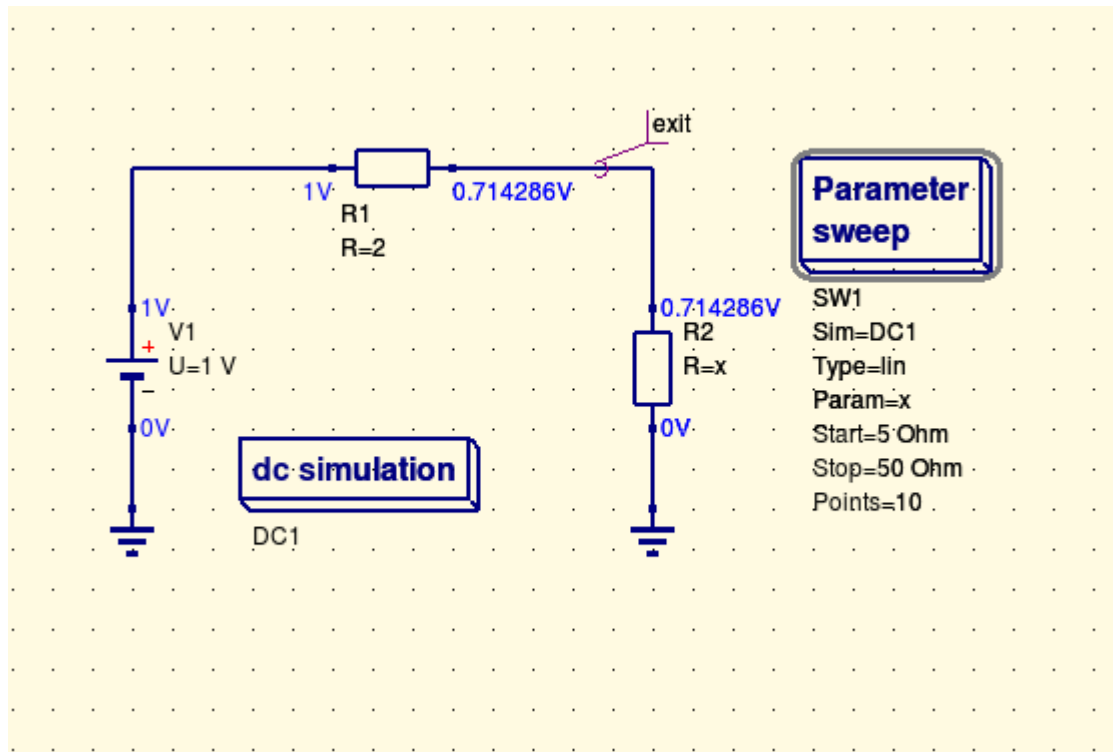


Figure 2.4: Parameter sweep mode

- the value of resistor R2 to the symbol x, which will serve as the argument for the current circuit calculation.
symbol: x has also written in the Param field of the component 'parameter sweep' attribute field.
- Changed the number of points to 10. simulating parameter x changed linearly
- value $5\ \Omega$ to $50\ \Omega$ at eleven points, where all the parameters of the circuit (current and voltages) calculated corresponding number of times because they depend on resistor R2 value.
- the resulting parameter selection form, we can change them, obtain and estimate the calculated voltage value on the resistor R2-UR2

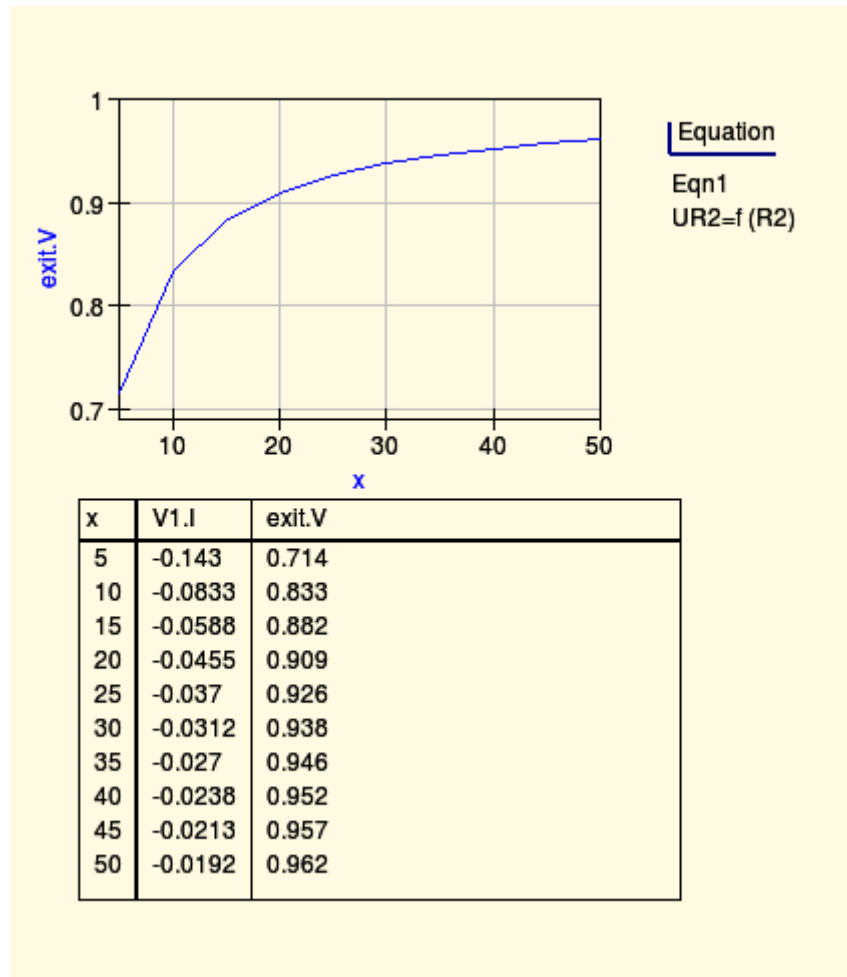


Figure 2.5: Curve and Table from Sweep simulation

- This graph showing the functional relationship between the value of R2 (which is variable) and the voltage on it - UR2. Generally it can be write as ' $UR2 = f(R2)$ '.
- The table display the current (V1.I) flowing through the voltage source V1 and the electrical circuit point with the signal output voltage (output V) against "Ground" as a function of parameter x.

2.3 References

- gschem to pcb tutorial, by Bill Wilson (release notes).
- gschem warmup, by Bill Willson.