

Pràctica 0. Octave and Qucs

How to use mathematical and simulation tools for circuit analysis

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In this lab session we are going to work with mathematical and simulation tools like Octave and Qucs. We will learn the basic features of both tools. We will practice with two circuits we already have studied at class. These tools will help us analyzing circuits.

ATTENTION: Please remember to work out individually those paragraphs looking as this one. This previous work has to be uploaded to the Atenea platform before 0:00 of the lab session day. It can be also delivered in paper format at the beginning of the lab session.

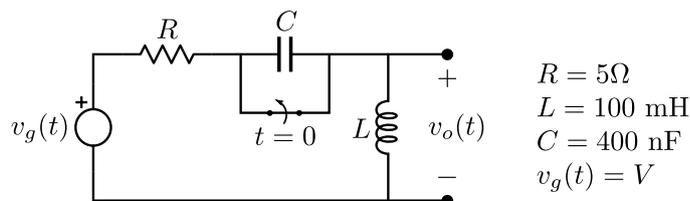
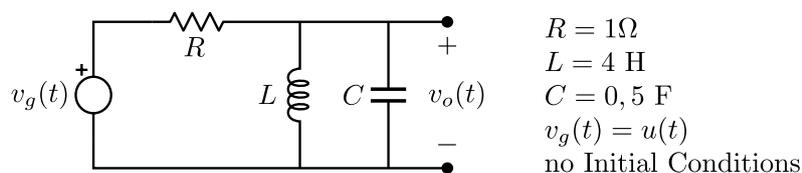
Remember also to bring all the required tools for a hardware laboratory session (protoboard, cables, etc).

1 Using Octave

In this lab session we review the analysis process of two circuits studied at theory class. We will use Octave to help us solving mathematical problems.

Previous Work 1. Read with attention the document *Octave essentials* that you can find in Atenea. Take a look at the link *Support for Octave*.

At theory class we have analysed the two circuits in the following figures:



Task 1. For both circuits, review all the analysis process done in theory class and recalculate all you can using Octave. Compare all the results with those we had worked out in theory class.

2 Using Qucs

In theory class, after analyzing the circuits, we had found the output voltage waveform. Another possibility to know the output voltage would be building a circuit in the laboratory and displaying the voltage. A third method would be simulation, for example using Qucs, where we can see the response on our computer screen.

Previous Work 2. Read with attention the document *Qucs essentials* that you can find in Atenea. Take a look at the link *Support for Qucs*.

Task 2. For both circuits, using Qucs, draw the schematic and display $V_g(t)$ and $V_o(t)$ in the transient simulation. Compare both diagrams with those we had found in theory class.