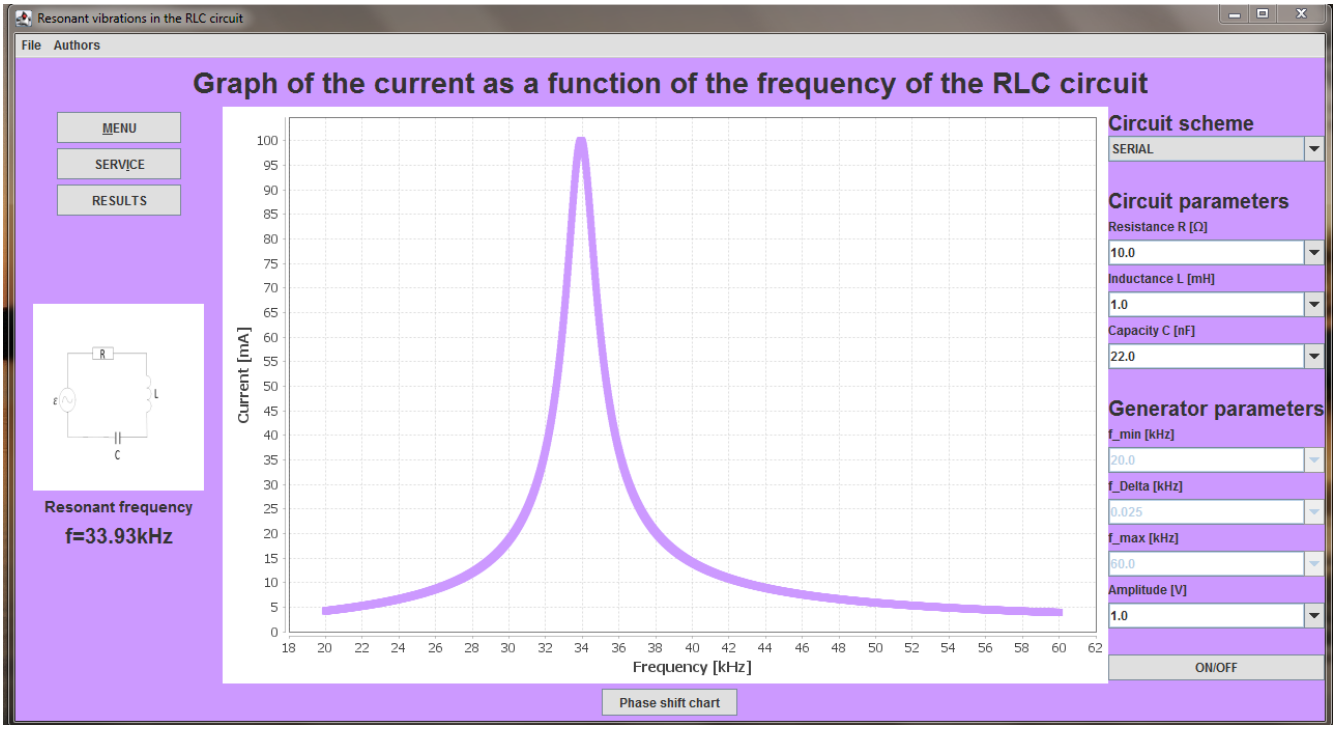
Resonance in a RLC circuit
user manual

The purpose of the program is to plot the module of the current flowing in the RLC resonant circuit. This application will allow you to select the parameters of both the passive elements of the circuit and the alternating voltage generator in terms of its operating frequency and the amplitude of the generated voltage.

The main program window consists of several panels, shown in the picture below.



On the right panel there are fields for selecting the values of system elements and generator parameters depending on individual needs. There are several values to choose from in the drop-down list, however the application also allows you to enter your own parameter values.

IMPORTANT

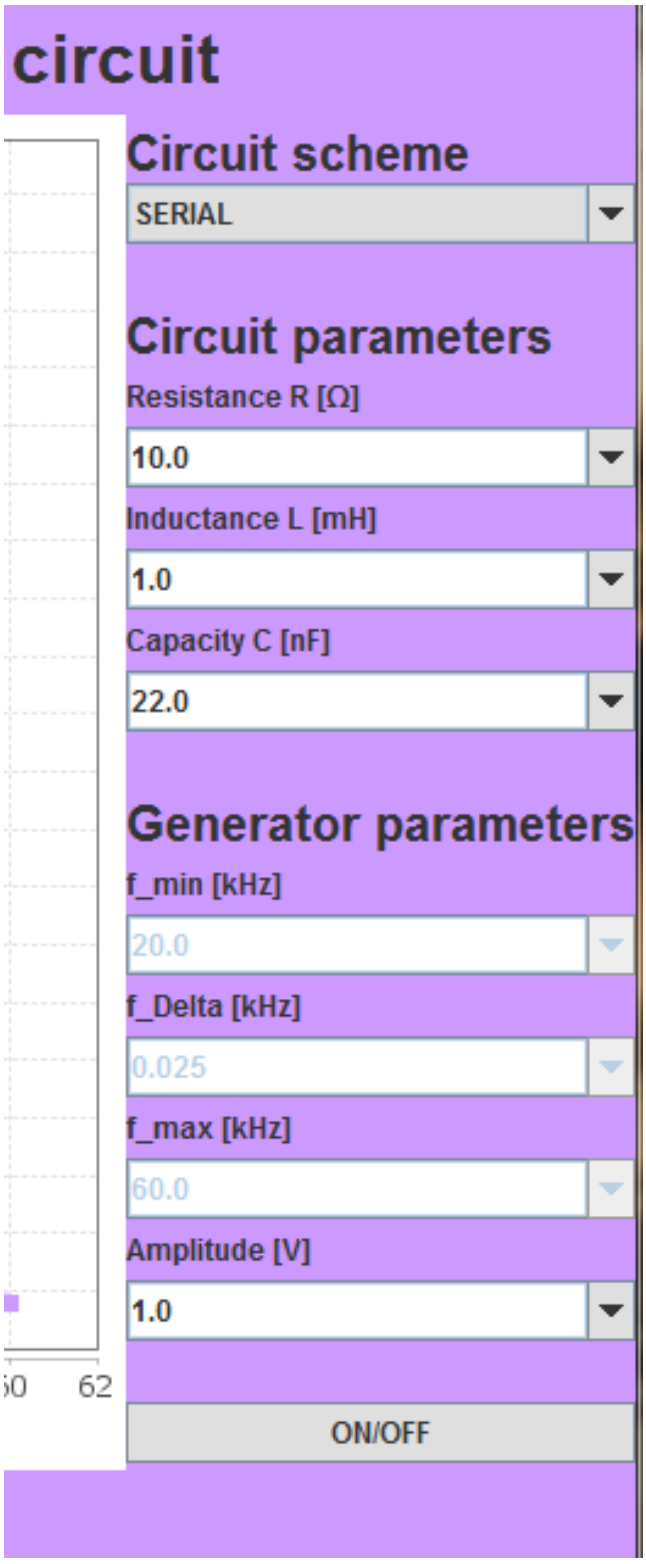
It should be remembered that the floating point numbers are entered with a dot, not a comma.

The series circuit is default. However, a parallel system can also be analyzed.
In the "Generator parameters" area on the right panel, you should select satisfactory generator operating frequency values. The graph will be drawn starting from the minimum frequency (f_min), and will end when the maximum frequency (f_max) is reached. In case the user select "step" frequency that will make f max value won't be possible to get, the biggest frequency (which is smaller that f_max) will be shown and the process of drawing will be stopped. The "Amplitude" field is responsible for changing the amplitude of the signal coming from the generator.

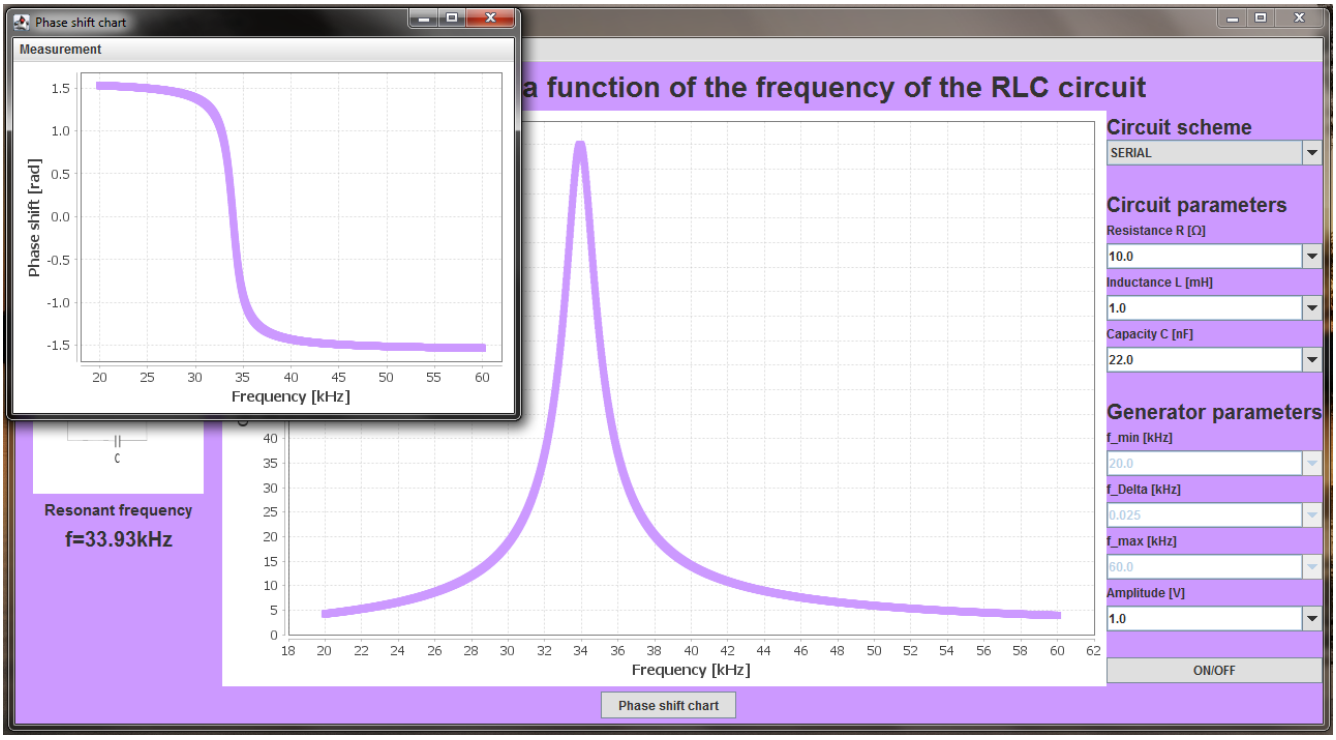
Pressing the ON / OFF button starts drawing the graph.

IMPORTANT

When the drawing of plot will be started some parameters won't be possible to change. To make changes and draw a different graph, use the File-New in menu. In that case you will be working with a clear page of application.

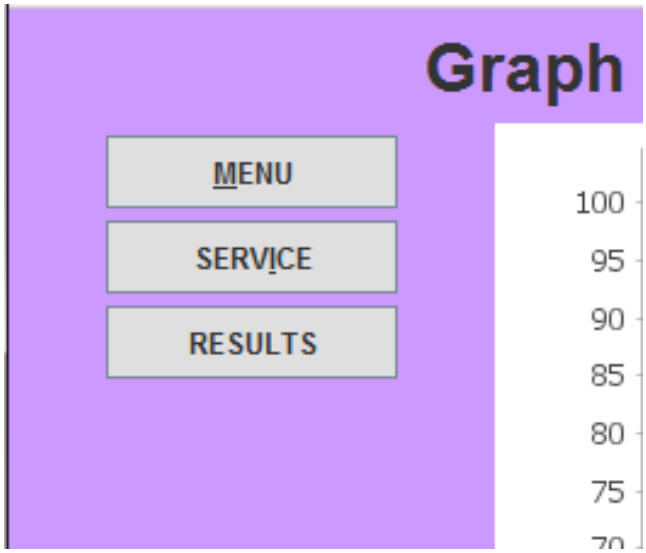


Below the central graph there is a button "Phase Shift Graph". After pressing it, a window with another graph will be displayed. In this window, you can use the "Measurements" menu to access the measurements collected for this graph and export them to a text file for further analysis.



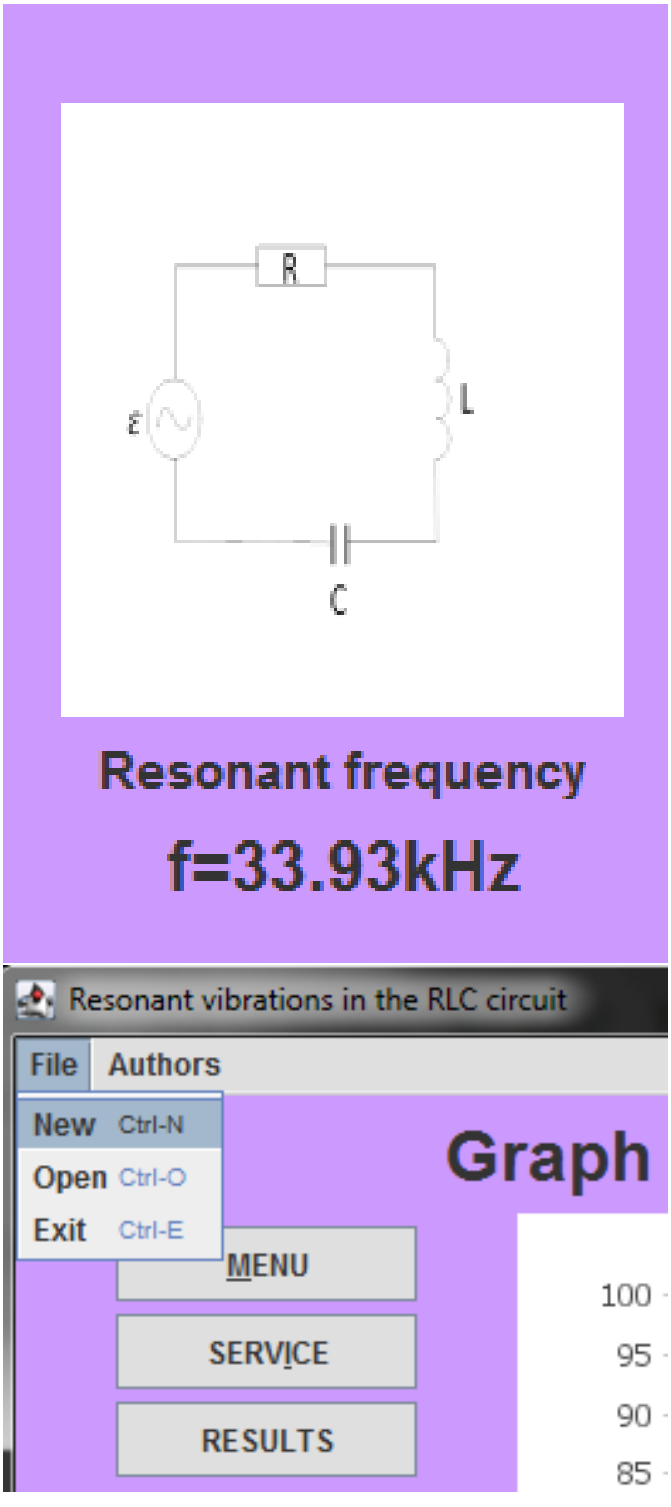
On the left panel you can find buttons that allow you to:

1. return to the program window, where you can find instructions with explanations of the physical meaning of the phenomenon of resonance
2. opening the technical manual for the application
3. access to measurement data collected during chart generation (and possible export to a text file)



In addition, on this panel there is a diagram of the electronic circuit, which gives simulated graph shown on the main panel. Below it, there is the value of the resonant frequency, corresponding to the parameters of the passive components selected by the user.

This frequency is changed automatically when the value of the L or C elements on the right panel are changed (because only their value determines the value of the resonance frequency).



There are three options on the File menu.
The "New" button causes immediate abandonment of the current sheet and opening a new one, in which all changes are restored to the initial settings.

The "Open" button allows you to load the passive parameters of the circuit from the text file.

The "Exit" button ends the program **without saving the current data**.