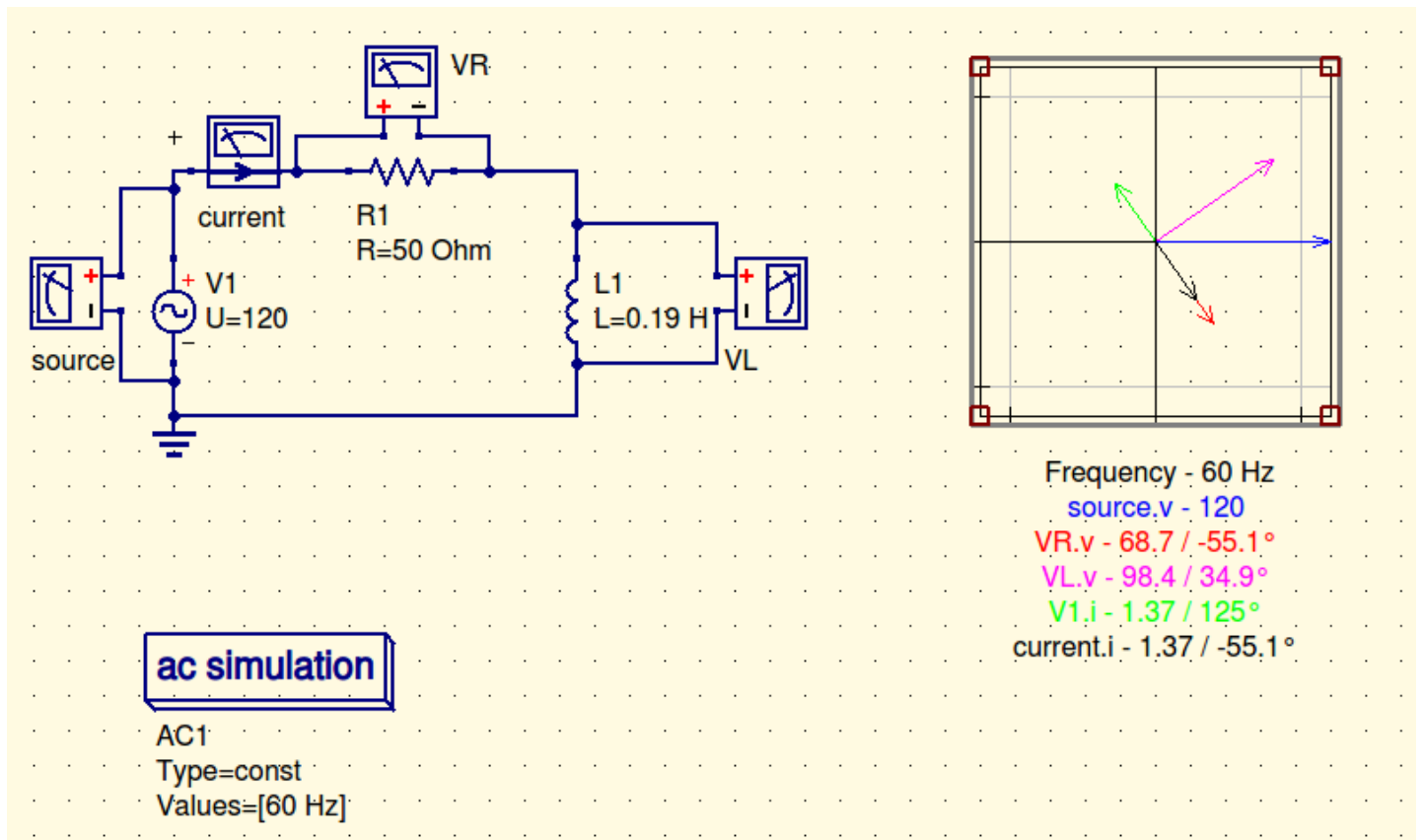# QUCS - New Modules

Phasor diagram
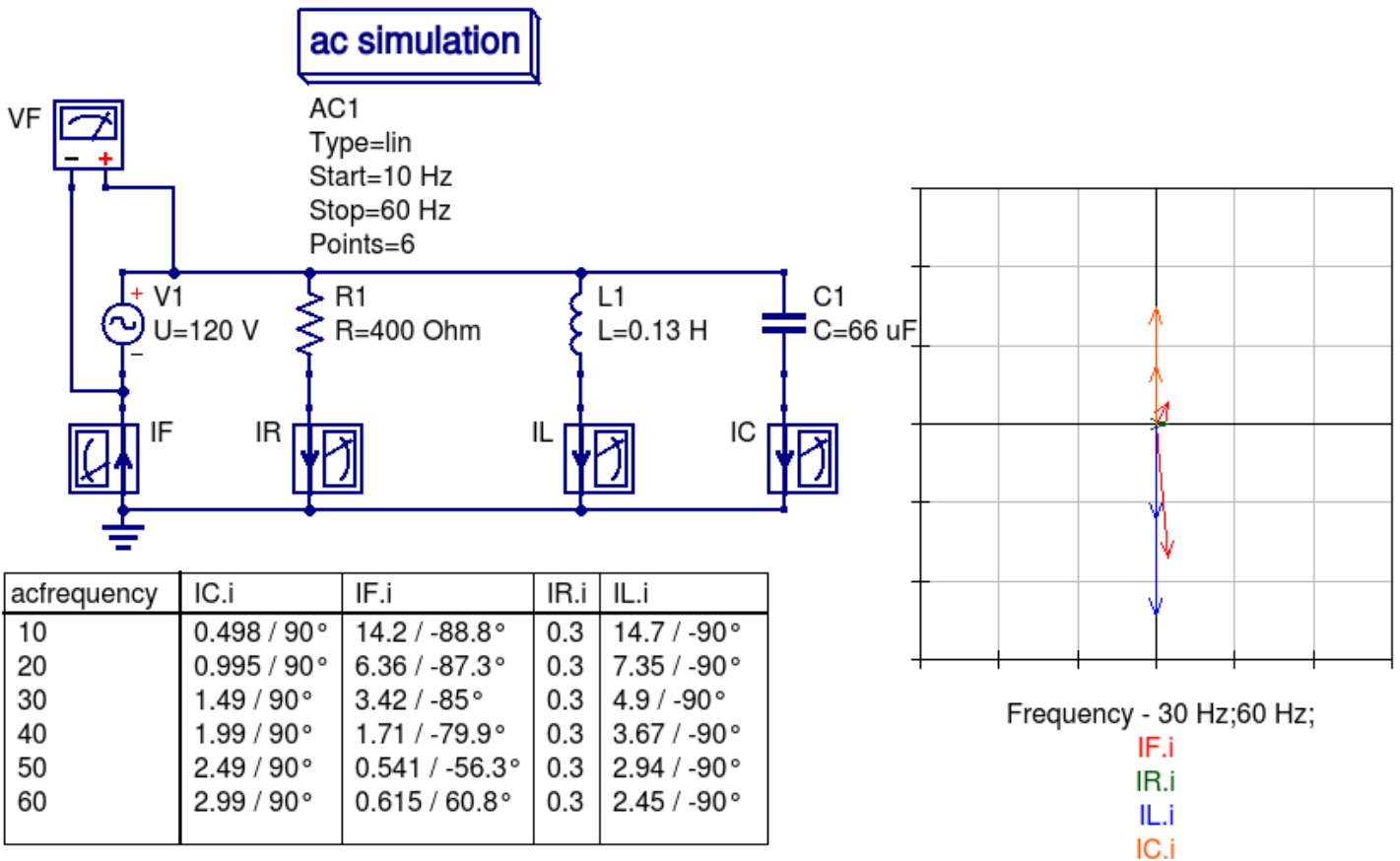
Only works in AC

AC simulation constante

This example shows the phasor diagram for a simple RL circuit at a constant frequency representing the vectors of voltage and current at the same graphic representing their values below.
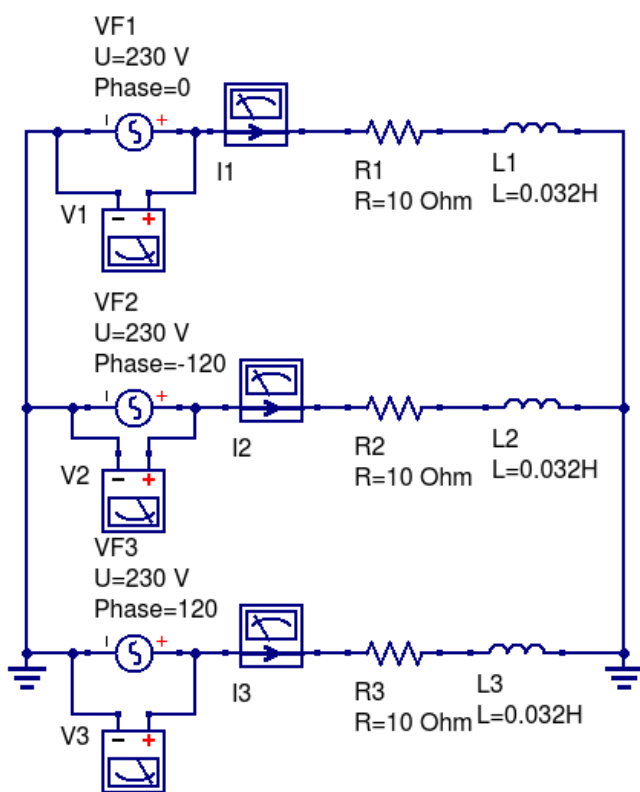
AC simulation linear

In this case it is represented the phasor diagram of an RLC circuit for various frequencies chosen in the diagram. The values of the vectors can be viewed from markers.

ac simulation

AC1
Type=lin
Start=10 Hz
Stop=60 Hz
Points=6

VF

+ V1
U=120 V

R1
R=400 Ohm

L1
L=0.13 H

C1
C=66 uF

IF

IR

IL

IC

acfrequency	IC.i	IF.i	IR.i	IL.i
10	0.498 / 90°	14.2 / -88.8°	0.3	14.7 / -90°
20	0.995 / 90°	6.36 / -87.3°	0.3	7.35 / -90°
30	1.49 / 90°	3.42 / -85°	0.3	4.9 / -90°
40	1.99 / 90°	1.71 / -79.9°	0.3	3.67 / -90°
50	2.49 / 90°	0.541 / -56.3°	0.3	2.94 / -90°
60	2.99 / 90°	0.615 / 60.8°	0.3	2.45 / -90°

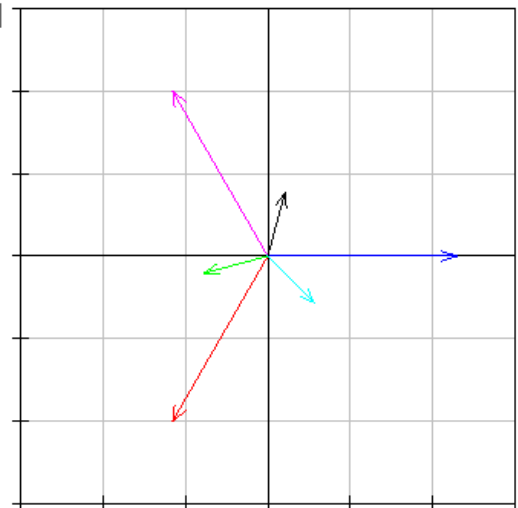Frequency - 30 Hz;60 Hz;
IF.i
IR.i
IL.i
IC.i

AC Three Phase Circuit

It just shows the functionality of the phasor diagram for a more complex circuit (three-phase circuit connected in Wye) representing the graphic chains and simple stresses in each branch

VF1
U=230 V
Phase=0

I1

R1
R=10 Ohm

L1
L=0.032H

V1

VF2
U=230 V
Phase=-120

I2

R2
R=10 Ohm

L2
L=0.032H

V2

VF3
U=230 V
Phase=120

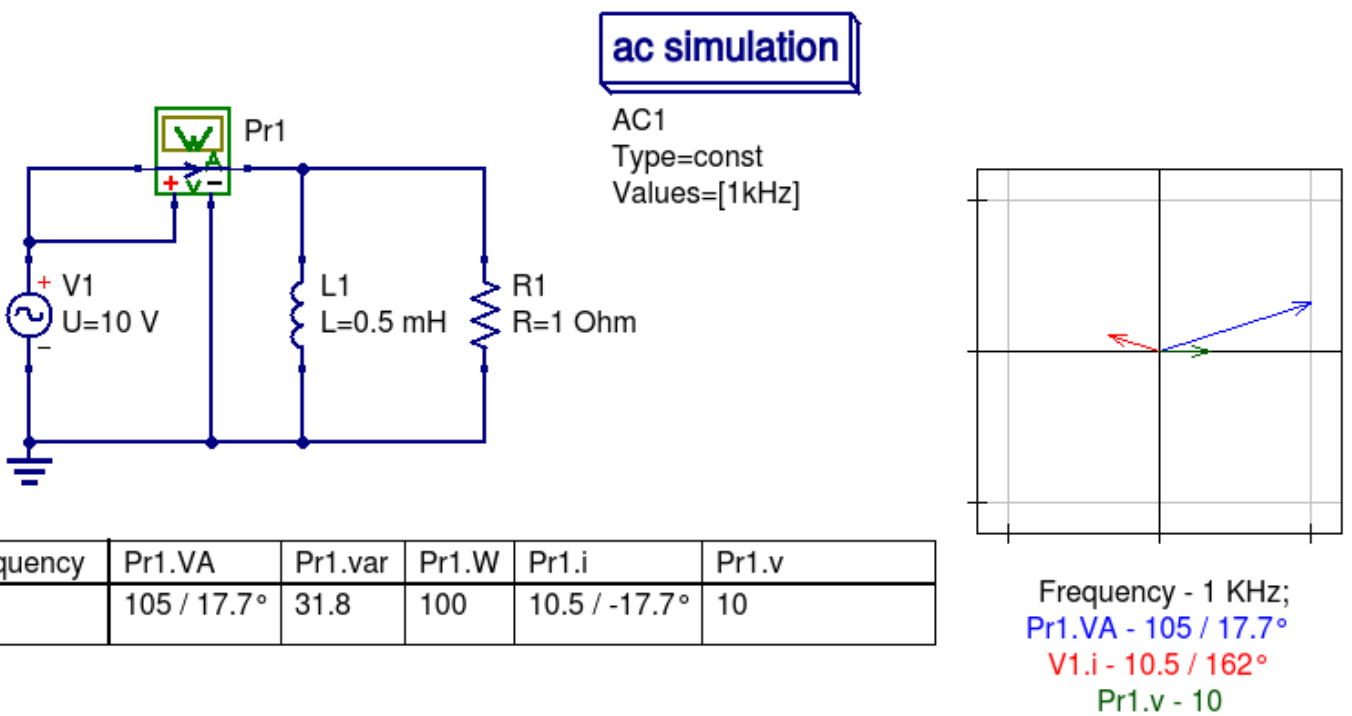I3

R3
R=10 Ohm

L3
L=0.032H

V3

ac simulation

AC1
Type=const
Values=[50 Hz]

Frequency - 50 Hz;
V1.v - 230
V2.v - 230 / -120°
V3.v - 230 / 120°
I2.i - 16.2 / -165°
I1.i - 16.2 / -45.2°
I3.i - 16.2 / 74.8°

Wattmeter

Now it is possible to represent the potential of the circuit several from the wattmeter that le the current and voltage values and creates data for apparent power (VA), true power (W) and reactive power (VAR). Also it is only possible to represent the vector of the apparent power in the phasor diagram.

ac simulation

AC1
Type=const
Values=[1kHz]

Pr1

+ V1
U=10 V

L1
L=0.5 mH

R1
R=1 Ohm

Frequency - 1 KHz;
Pr1.VA - 105 / 17.7°
V1.i - 10.5 / 162°
Pr1.v - 10

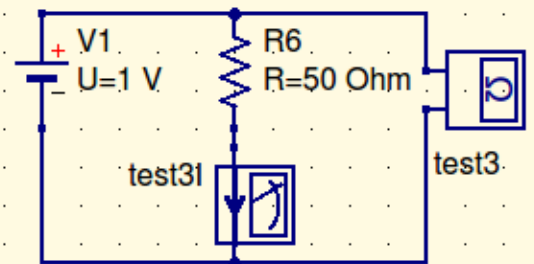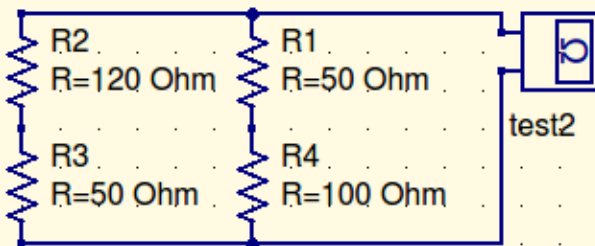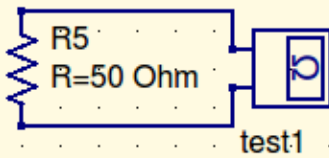| acfrequency	Pr1.VA	Pr1.var	Pr1.W	Pr1.i	Pr1.v
1e3	105 / 17.7°	31.8	100	10.5 / -17.7°	10

Ohmmeter

DC simulation

The ohmmeter in DC simulation can only calculate the resistance at its terminals from the internal constant current source and voltage values obtained if there is no external source connected to it, but is nan + jnan (invalid) and does not issue own current.

dc simulation

DC1

number	test1.Ohm	test2.Ohm	test3.Ohm	test3I.I	V1.I
1	50	79.7	nan+jnan	0.02	-0.02

R5
R=50 Ohm

test1

R2
R=120 Ohm

R1
R=50 Ohm

R3
R=50 Ohm

R4
R=100 Ohm

test2

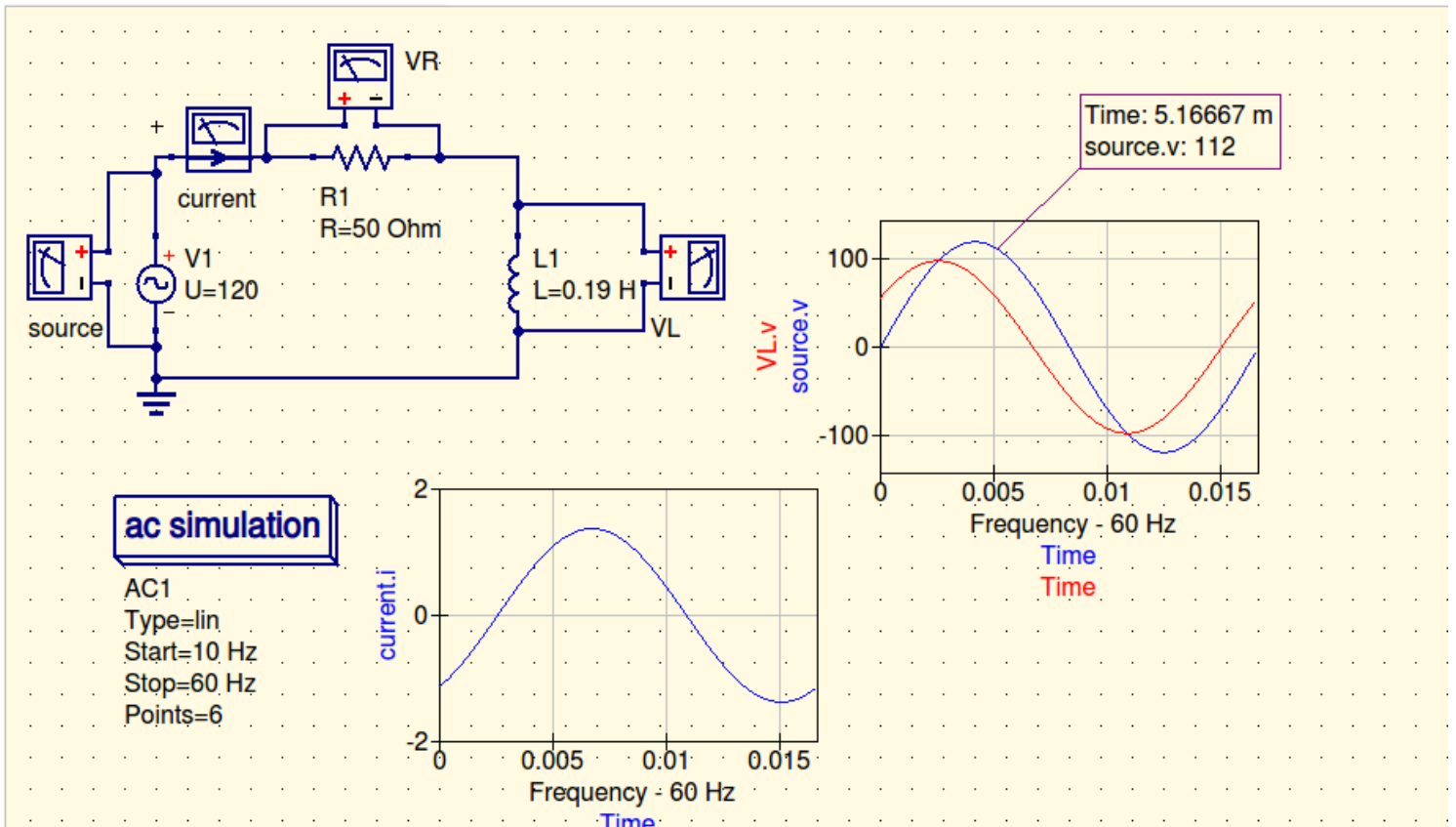+ V1
U=1 V

R6
R=50 Ohm

test3

test3I

AC simulation

In AC can measure the impedance component to its terminals because of the alternating current source showing values for each existing frequency. Have the same behavior described in the previous example in case of external source

L1
L=0.19 H

test1

R2
R=120 Ohm

L2
L=0.19 H

test2

C1
C=0.19 F

R4
R=100 Ohm

ac simulation

AC1
Type=lin
Start=10 Hz
Stop=60 Hz
Points=6

L3
L=0.19 H

test3

+ V2 test3I
U=1 V

acfrequency	test1.Ohm	test2.Ohm	test3.Ohm	test3I.i	V2.i
10	11.9 / 90°	54.9 / 3.68°	nan+jnan	0:0838 / -90°	0.0838 / 90°
20	23.9 / 90°	55.8 / 7.23°	nan+jnan	0:0419 / -90°	0.0419 / 90°
30	35.8 / 90°	57.2 / 10.5°	nan+jnan	0:0279 / -90°	0.0279 / 90°
40	47.8 / 90°	59.1 / 13.3°	nan+jnan	0:0209 / -90°	0.0209 / 90°
50	59.7 / 90°	61.3 / 15.6°	nan+jnan	0:0168 / -90°	0.0168 / 90°
60	71.6 / 90°	63.8 / 17.6°	nan+jnan	0:014 / -90°	0.014 / 90°

Temporal diagram

Only works in AC

AC simulation

It is possible to represent a temporal wave to only a user- selected frequency without using transient simulation while we are in a AC simulation using the temporal diagram that has the same style than Cartesian graph.