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July 31, 2016

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## Interfacing NGSPICE and OCTAVE/MATLAB within Emacs

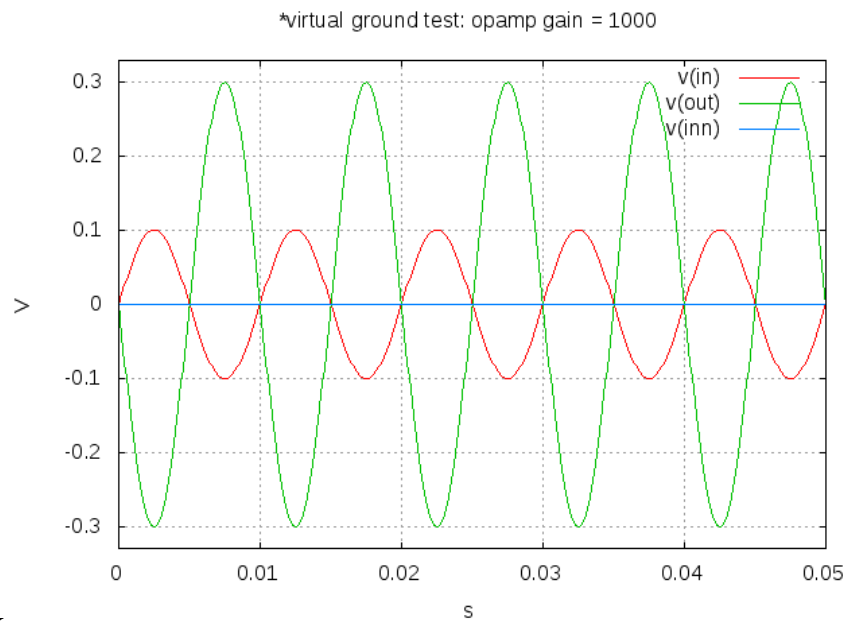
by Tiago Oliveira Weber <2016-06-26 Sun>

### Examples

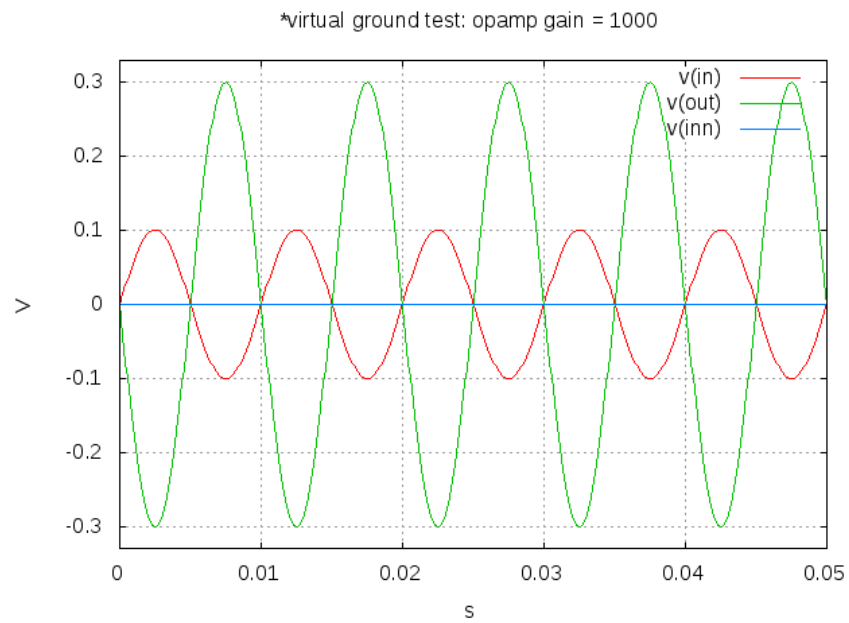
#### Octave and Ngspice

##### Example using fixed values on variables (WORKS)

```
*Virtual Ground Test: opamp gain = 1000
vin in 0 dc 0V sin(0 0.1 100Hz)
r1 in inn $r1
r2 inn out $r2
EOpamp out 0 0 inn 1000
.tran 0.1ms 0.05s
.print tran v(in)
.meas tran vtest find v(in) at=0.04e-3
.end
.control
run
set gnuplot_terminal=png
gnuplot $file v(in) v(out) v(inn)
.endc
```



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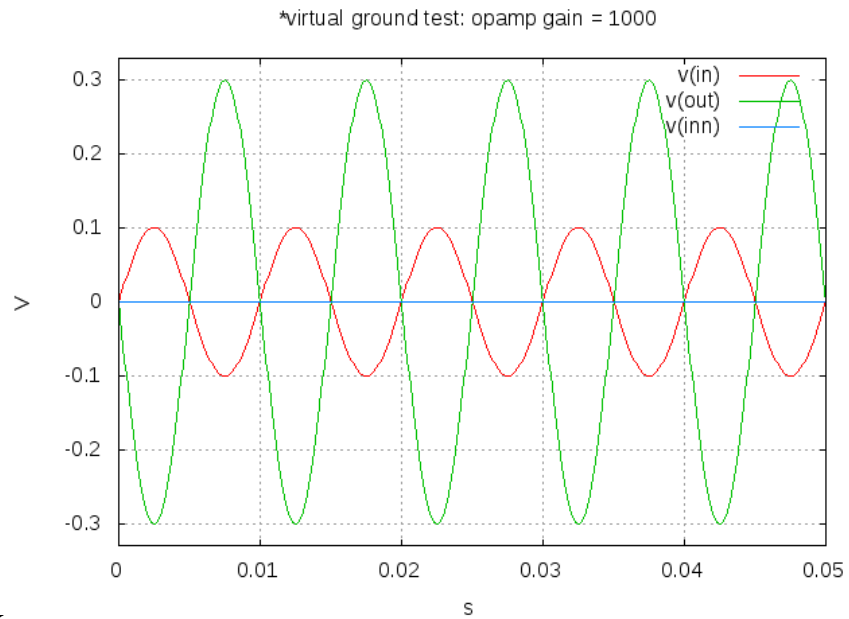


Example using a single variable result from previous code block  
(WORKS)

```
gain=-2;
r1=10e3;
r2 = -gain*r1;
ans = r2;
```

20000

```
*Virtual Ground Test: opamp gain = 1000
vin in 0 dc 0V sin(0 0.1 100Hz)
r1 in inn $r1
r2 inn out $r2
EOpamp out 0 0 inn 1000
.tran 0.1ms 0.05s
.print tran v(in)
.meas tran vtest find v(in) at=0.04e-3
.end
.control
run
set gnuplot_terminal=png
gnuplot $file v(in) v(out) v(inn)
.endc
```



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### Example using a vector result from previous code block (WORKS)

```
gain=-3;
r1=10e3;
r2 = -gain*r1;
ans = [r1 r2];
```

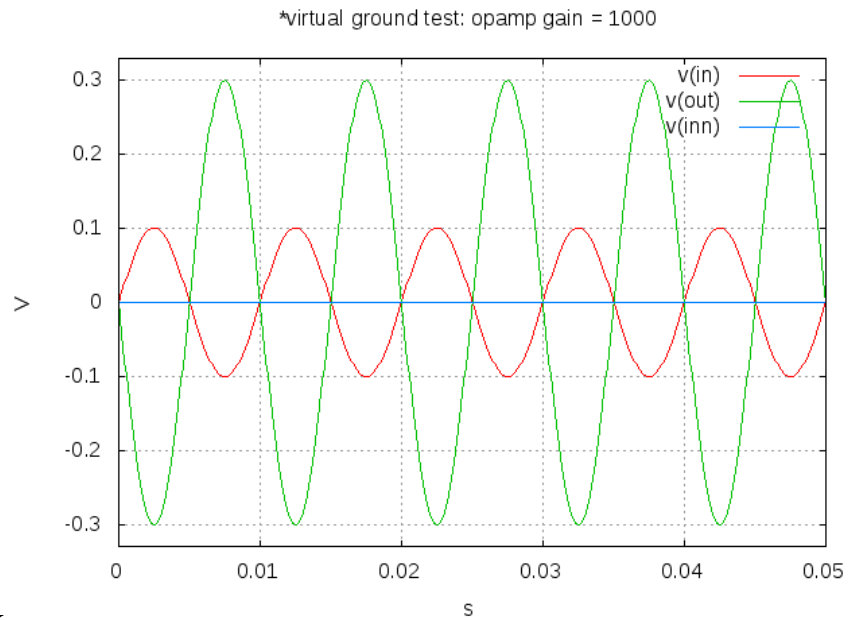
10000 30000

```
*Virtual Ground Test: opamp gain = 1000
vin in 0 dc 0V sin(0 0.1 100Hz)
r1 in inn $r1[0]
r2 inn out $r1[1]
EOpamp out 0 0 inn 1000
.tran 0.1ms 0.05s
.print tran v(in)
.meas tran vtest find v(in) at=0.04e-3c
.end
.control
run
set gnuplot_terminal=png
```

```

gnuplot $file v(in) v(out) v(inn)
.endc

```

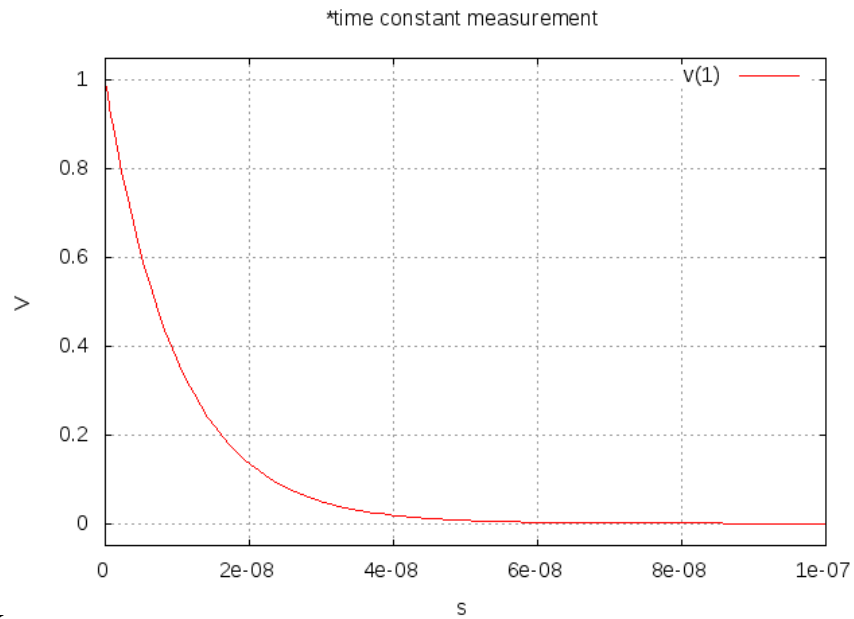


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```

*Time Constant Measurement
r1 1 0 10k
c1 1 0 1p
.IC V(1)=1
.tran 1n 0.1u
.print tran v(1)
.end
.control
run
set gnuplot_terminal=png
gnuplot $file v(1)
meas tran value_at_tau find V(1) at=1e-8
meas tran value_at_five_tau find V(1) at=5e-8
echo value_at_tau = "$&value_at_tau" > $file.txt
echo value_at_five_tau = "$&value_at_five_tau" >> $file.txt
.endc

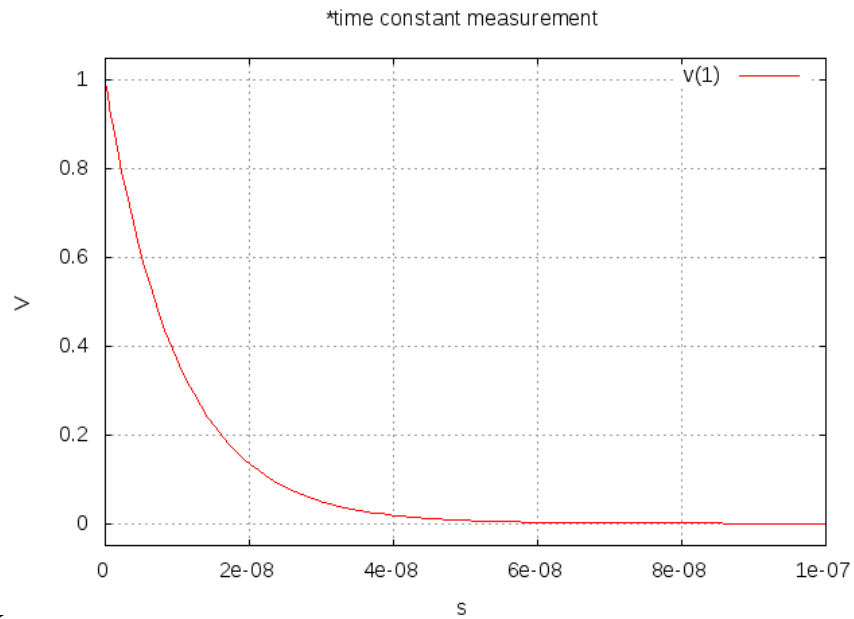
```



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### Example using output from ngspice to octave

```
*Time Constant Measurement
r1 1 0 10k
c1 1 0 1p
.IC V(1)=1
.tran 1n 0.1u
.print tran v(1)
.end
.control
run
set gnuplot_terminal=png
gnuplot $file v(1)
meas tran value_at_tau find V(1) at=1e-8
meas tran value_at_five_tau find V(1) at=5e-8
echo "$&value_at_tau,$&value_at_five_tau" > $file.txt
.endc
```



```
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```

```
a = 2
ans = test
```

**Octave only (for test)**

**Test octave to octave vector (WORKS)**

```
gain=-2;
r1=10e3;
r2 = -gain*r1;
ans = [r1 r2];
```

```
10000 20000
```

```
vo=vi.*2;
ans = vo;
```

```
20000 40000
```

**Test octave vector to octave element (WORKS)**

```
vo=vi.*2;
ans = vo;
```