

triangle_1.gce

Attributes

```
mainvars: y
iparms: i0=0
rparms:
+   t1=1 t2=1 t0=0 g_high=1.0 g_low=-1.0
+   eps1=1.0e-9
```

Description

triangle_1.gce is a triangular wave source with the general variable y as its output. The parameters have the following meaning:

t1: The first part of one period. y goes from g_high to g_low in this interval if $i0=0$ (and from g_low to g_high if $i0=1$).

t2: The second part of one period.

t0: An “offset” time interval. Its meaning will become clear in the following example.

eps1: Used in time step control. $eps1$ can generally be set to be $0.001 \times \min(t1, t2)$.

AC behaviour is not implemented.

The effect of the various parameters of `triangle_1.gce` on the waveforms is shown in Fig. 1. The corresponding circuit file (available as `triangle_1_gce.in` in the examples directory) is reproduced below.

```

title: testing of triangle_1

begin_circuit
  gelement type=triangle_1 y=y1 t1=2 t2=3 t0=0 i0=0
+   g_high=2 g_low=-2 epsl=1e-3

  gelement type=triangle_1 y=y2 t1=2 t2=3 t0=0 i0=1
+   g_high=2 g_low=-2 epsl=1e-3

  gelement type=triangle_1 y=y3 t1=2 t2=3 t0=1.5 i0=0
+   g_high=2 g_low=-2 epsl=1e-3

  outvar:
+   y1=var_of_y1
+   y2=var_of_y2
+   y3=var_of_y3
end_circuit

begin_solve
  solve_type=startup
  initial_sol initialize
  method: t_startup=0
end_solve

begin_solve
  solve_type=trns
  initial_sol previous
  begin_output
    filename=triangle_1_gce.dat
    variables: y1 y2 y3
  end_output
  method:
+   back_euler=yes
+   t_start=0 t_end=16 delt_const=0.5 delt_min=0.1
end_solve

end_cf

```

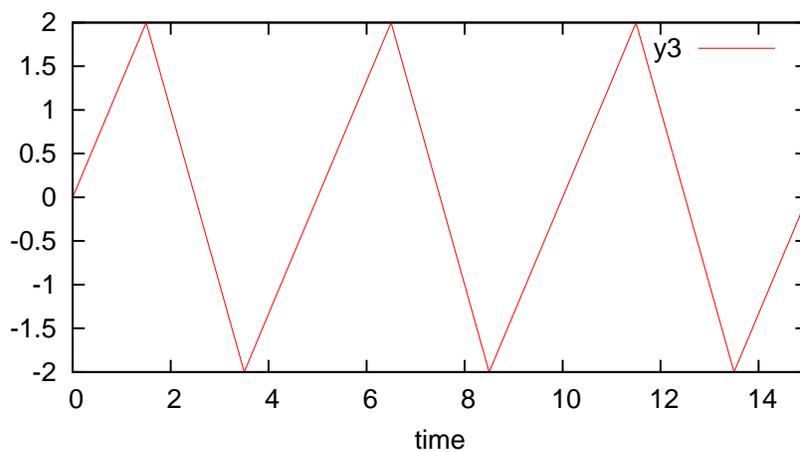
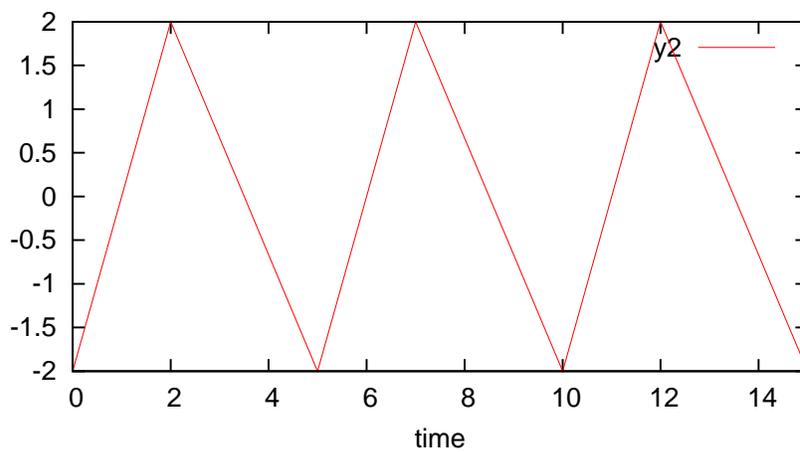
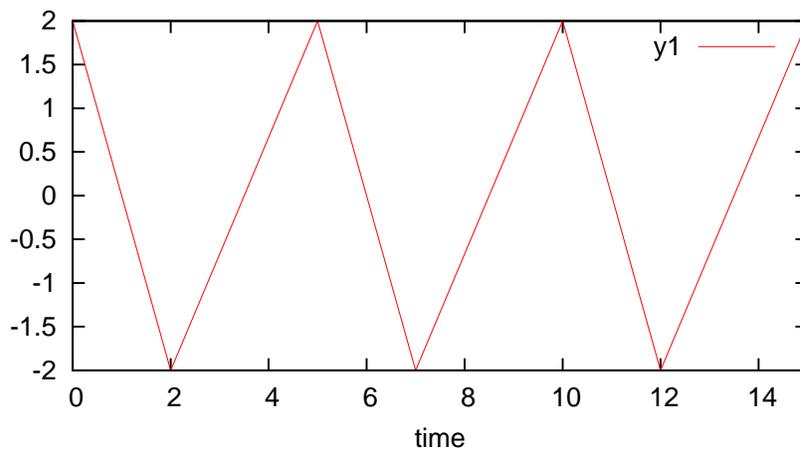


Figure 1: Waveforms obtained with `triangle_1.gce`: (a) y_1 : $t_1=2$, $t_2=3$, $t_0=0$, $i_0=0$, $g_{high}=2$, $g_{low}=-2$, (b) y_2 : $t_1=2$, $t_2=3$, $t_0=0$, $i_0=1$, $g_{high}=2$, $g_{low}=-2$, (c) y_3 : $t_1=2$, $t_2=3$, $t_0=1.5$, $i_0=0$, $g_{high}=2$, $g_{low}=-2$.