triangle_3.gce

Attributes

```
  mainvars: y
  iparms: i0=0
  rparms:
+    freq0=10  t0=0  v_high=1.0  v_low=-1.0
+    epsl=1.0e-9
```

Description

`triangle_3.gce` is a triangular wave source with the general variable `y` as its output. The parameters have the following meaning:

freq0: Frequency. In the first half, the voltage goes from `v_high` to `v_low` if `i0`=0 (and from `v_low` to `v_high` if `i0`=1).

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

epsl: Used in time step control. `epsl` can generally be set to be $0.001 \times \min(\text{t1}, \text{t2})$.

AC behaviour is not implemented.

The effect of the various paramters of `triangle_3.gce` on the waveforms is shown in Fig. 1. The corresponding circuit file (available as `triangle_3_gce.in` in the examples directory) is reproduced below.

```
title: testing of triangle_3

begin_circuit
   gelement type=triangle_3 y=y1 freq0=0.2 t0=0 i0=0
+      g_high=2 g_low=-2 epsl=1e-3

   gelement type=triangle_3 y=y2 freq0=0.2 t0=0 i0=1
+      g_high=2 g_low=-2 epsl=1e-3

   gelement type=triangle_3 y=y3 freq0=0.2 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_3_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
```
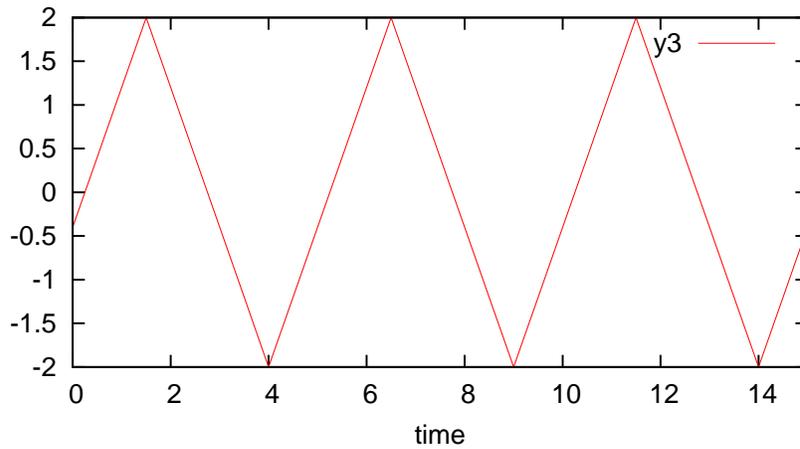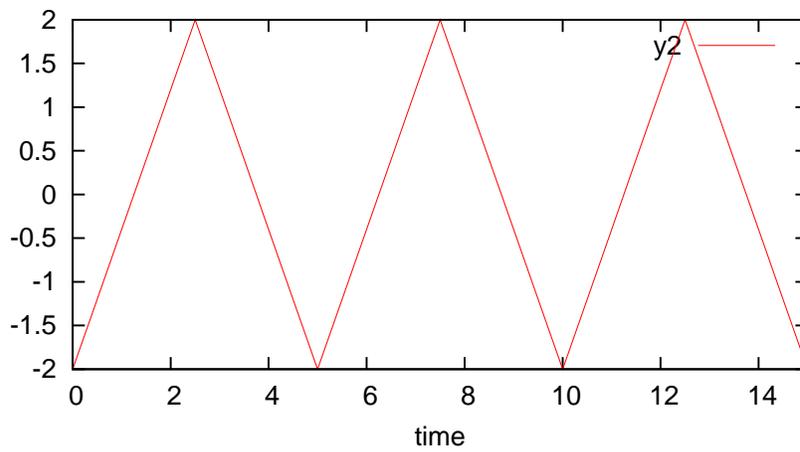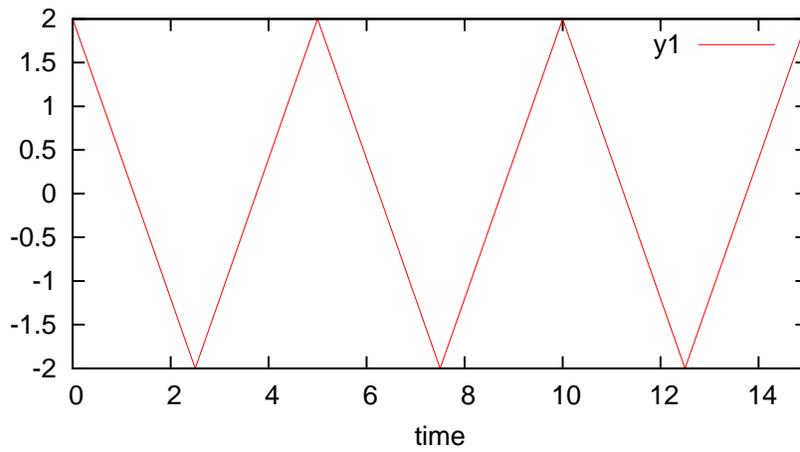
Figure 1: Waveforms obtained with `triangle_3.gce`: (a) `y1`: `freq0=0.2`, `t0=0`, `i0=0`, `v_high=2`, `v_low=-2`, (b) `y2`: `freq0=0.2`, `t0=0`, `i0=1`, `v_high=2`, `v_low=-2`, (c) `y3`: `freq0=0.2`, `t0=1.5`, `i0=0`, `v_high=2`, `v_low=-2`.