

cmptr_1.gce

Attributes

```
mainvars: x1 x2 y
rparms: g_high=1.0 epsl=1.0e-6 delta_tmin=1.0e-6
+ delta_tnrml=1.0e-3
```

Description

`cmptr_1.gce` is a comparator which compares general variables `x1` and `x2`. The output `y` is `g_high` if `x1 > x2`; else, it is zero.

The parameters `delta_tmin`, `delta_tnrml`, and `epsl` are used for controlling the simulator time steps. Additional time points are forced, depending on the values of `delta_tmin` and `delta_tnrml`, when `x1` and `x2` are within `epsl` of each other. This feature allows accurate simulation without having to make the average time step very small. Generally, `delta_tnrml` should be made equal to the typical simulator time step (`delt_const`) while `delta_tmin` should be made much smaller (say, by a factor of 100).

AC behaviour is not implemented.

Fig. 1 shows typical waveforms obtained with `cmptr_1.gce`. The corresponding circuit file (available as `cmptr_1_gce.in` in the examples directory) is reproduced below.

```

title: testing of cmptrtr_1

begin_circuit
    gelement type=triangle_2 y=x1 i0=0 tperiod=8m t0=0
+    g_high=1 g_low=-1 epsl=1u

    gelement type=triangle_2 y=x2 i0=1 tperiod=8m t0=0
+    g_high=1 g_low=-1 epsl=1u

    gelement type=cmptrtr_1 x1=x1 x2=x2 y=y g_high=1.2 epsl=1.0e-6
+    delta_tmin=0.20u delta_tnrml=1.00m

    outvar:
+    x1=var_of_x1
+    x2=var_of_x2
+    y=var_of_y
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=cmptrtr_1_gce.dat limit_lines=10000
        variables: x1 x2 y
    end_output
    method: itmax_trns=10000
+    back_euler=yes
+    t_start=0 t_end=20m delt_const=0.80m delt_min=0.1u
+    n_wrtiterno=1000
end_solve

end_cf

```

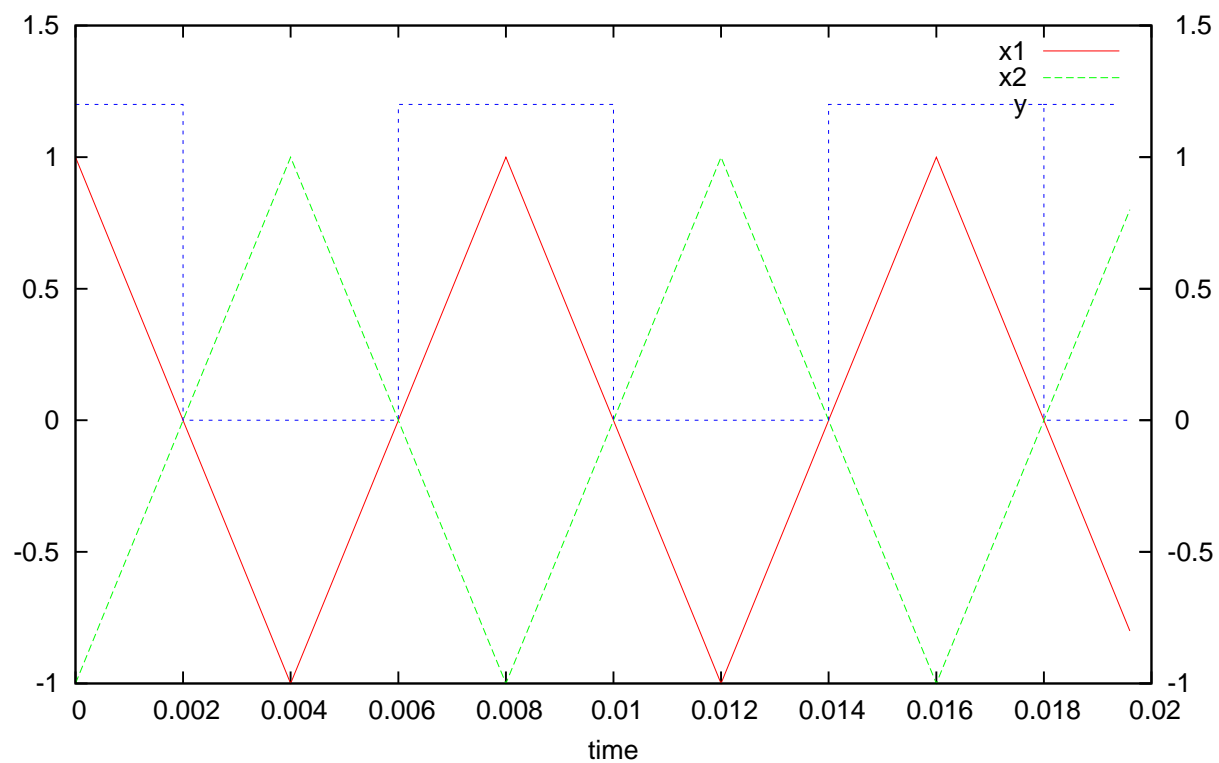


Figure 1: Waveforms obtained with `cmprtr_1.gce` (see the circuit file for details).