Attributes

```
xbe name=cmpr_2_1 evaluate=yes limit_tstep=yes save_history=yes
# if x1 > x2, y = high, else low
# (reverse if flag_inverting=1)
Jacobian: variable
input_vars: x1 x2
output_vars: y
aux_vars:
iparms:
+ flag_invert=0
+ flag_quad=0
sparms:
rparms:
+ y_low=0
+ y_high=1
+ x1_1=0
+ x1_2=0
+ x2_1=0
+ x2_2=0
+ t_1=0
+ t_2=0
+ epsl=1.0e-6
  delt_min=1.0e-6
+
+ delt_nrml=0.001
stparms:
igparms:
outparms: x1 x2 y
```

Description

cmpr_2_1.xbe is a comparator with the following behaviour.

```
(a) flag_invert = 0:
y = y_high if x1 > x2,
= y_low if x1 < x2.</li>
(b) flag_invert = 1:
y = y_high if x1 < x2,
= y_low if x1 > x2.
```

The parameters delt_min, delt_nrml, and epsl are used for controlling the simulator time steps. Additional time points are forced, depending on the values of delt_min and delt_nrml, 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, delt_nrml should be made equal to the typical simulator time step while delt_min should be made much smaller (say, by a factor of 100).

flag_quad decides the type of interpolation used to estimate the cross-over time (when $x_1 - x_2$ changes sign). If flag_quad is 0, linear interpolation is used; if it is 1, quadratic interpolation is used. For more details, see Ref. [1].

References

1. M.B. Patil, R.D. Korgaonkar, K. Appaiah, "GSEIM: A General-purpose Simulator with Explicit and Implicit Methods," submitted to Sādhanā, also available at https://arxiv.org/abs/2104.06621