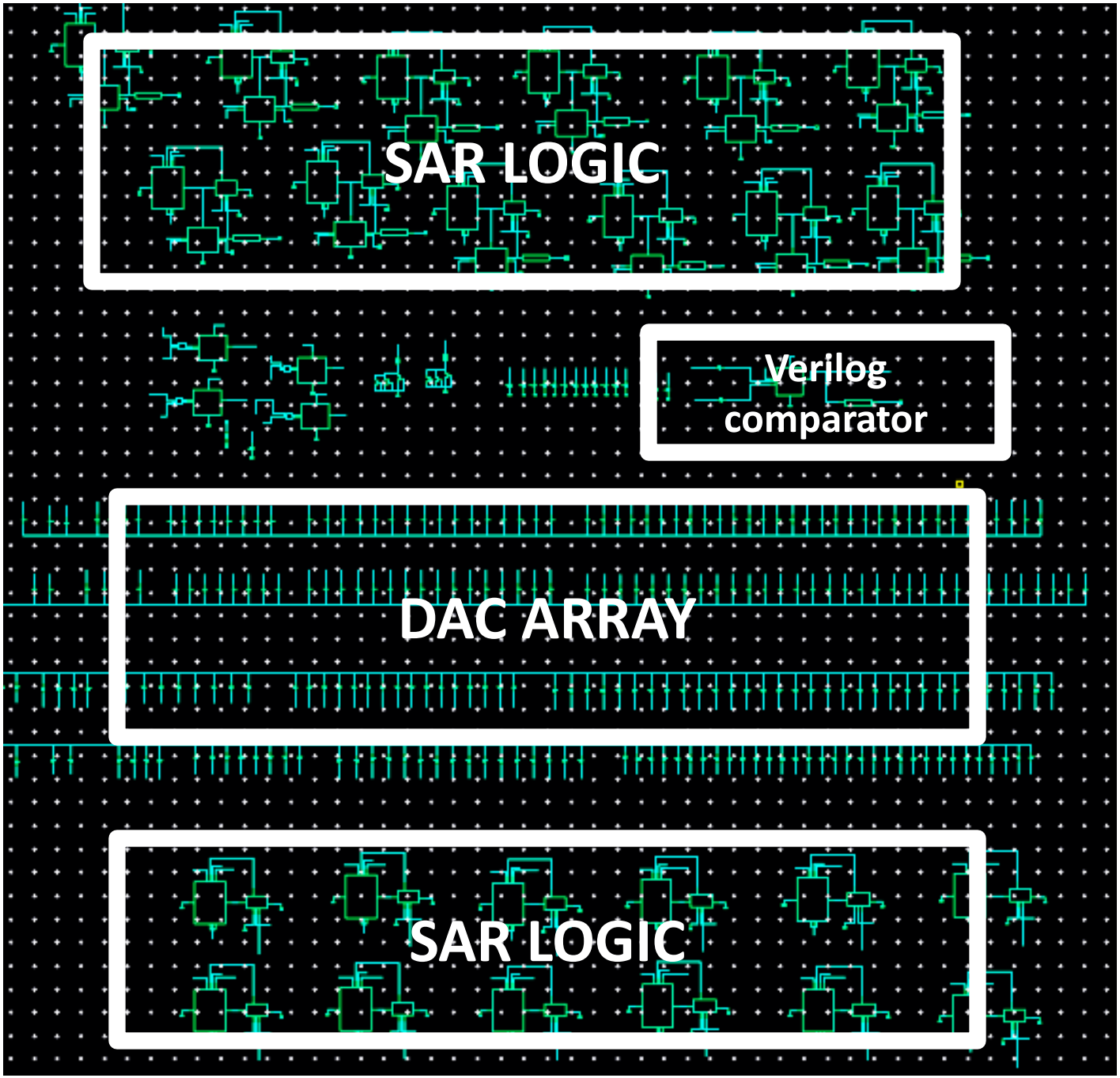
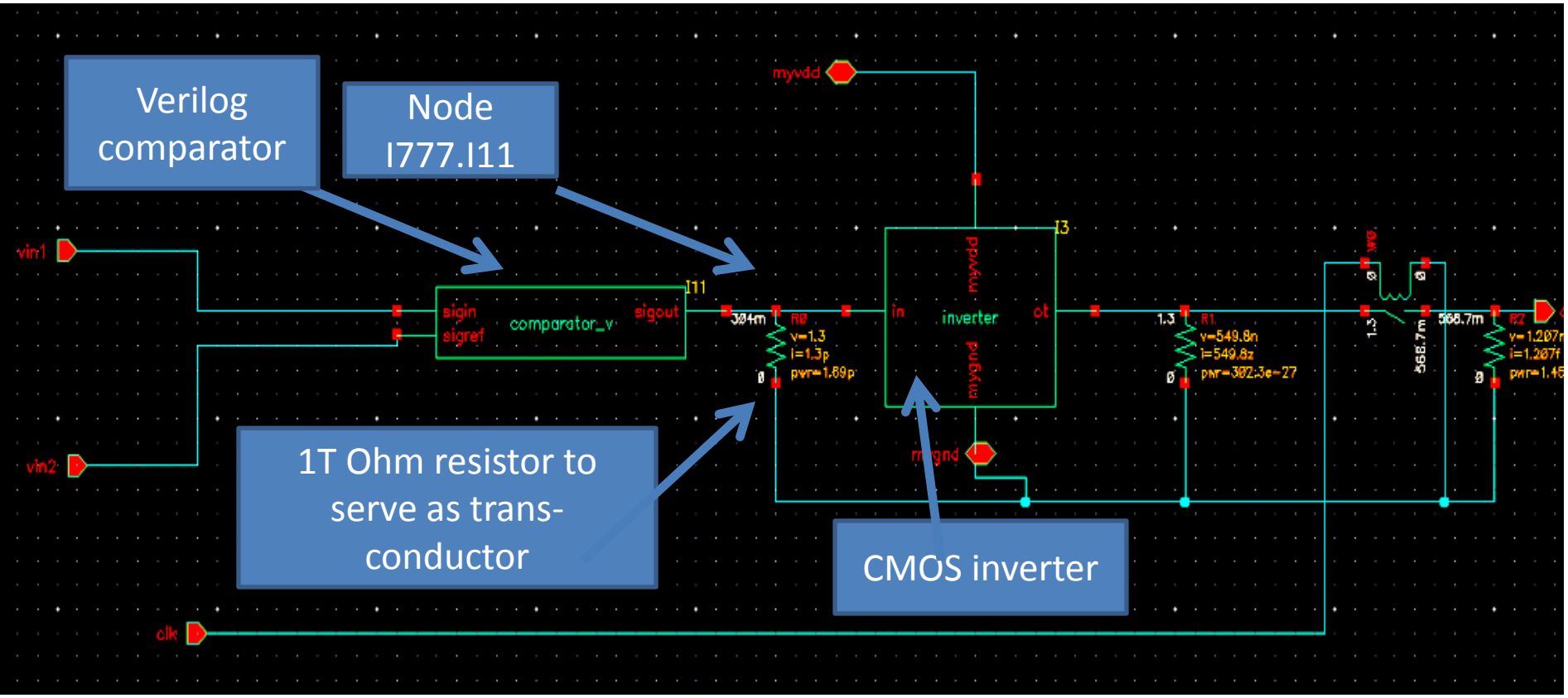

SAR LOGIC
Verilog
comparator
DAC ARRAY
SAR LOGIC


Verilog comparator
Node I777.I11
1T Ohm resistor to serve as trans-conductor
CMOS inverter
myvdd
vin1
vin2
clk
sigin
sigref
comparator_v
sigout
I11
R0
v=1.3
i=1.3p
pwr=1.69p
I3
in
inverter
ot
R1
v=549.8n
i=549.8z
pwr=302.3e-27
R2

I777 (comparat_VW) Read veriloga

```
`include "discipline.h"
`include "constants.h"
module comparator( sigin, sigref, sigout );
input sigin, sigref;
output sigout;
electrical sigin, sigref, sigout;
parameter real sigout_high = 1.3;
parameter real sigout_low = 0;
   analog begin
            if (V(sigin) < V(sigref))    V(sigout)<+sigout_low;
                                    if   (V(sigin)>V(sigref))    V(sigout)<+sigout_high;
      end
endmodule
```

This is a very simple comparator code……and this results in convergence problem!!!! What should I change here?????

```
Created directory input.ahdlSimDB/2452_proj_65LPE_temp_sensor_comparator_v_veriloga_veriloga.va.comp
Created directory input.ahdlSimDB/2452_proj_65LPE_temp_sensor_comparator_v_veriloga_veriloga.va.comp
Compiling ahdlcmi module library.
Finished compilation in 1 s (elapsed).
Installed compiled interface for comparator.

Time for Elaboration: CPU = 133.979 ms, elapsed = 1.94945 s.
Time accumulated: CPU = 562.913 ms, elapsed = 2.45764 s.
Peak resident memory used = 103 Mbytes.


Time for EDB Visiting: CPU = 27.996 ms, elapsed = 28.198 ms.
Time accumulated: CPU = 590.909 ms, elapsed = 2.486 s.
Peak resident memory used = 104 Mbytes.


Notice from spectre during topology check.
    No DC path from node `I1602.I18.net8' to ground, Gmin installed to provide path.
    No DC path from node `I1602.I19.net8' to ground, Gmin installed to provide path.
    No DC path from node `I1602.I22.net8' to ground, Gmin installed to provide path.
    No DC path from node `I1602.I21.net8' to ground, Gmin installed to provide path.
    No DC path from node `I1602.I23.net8' to ground, Gmin installed to provide path.
        Further occurrences of this notice will be suppressed.
Warning from spectre during initial setup.
    WARNING (SPECTRE-293): Too many saved signals [ 1147 ]. Slow initialization is expected!


Circuit inventory:
               nodes 451
                 bjt 6
               bsim4 834
           capacitor 256
          comparator 1
             isource 2
               relay 1
            resistor 3
                veri 13
             vsource 17
```

This is not the problem off course!!

I am not sure about this

```
    abstol(V) = 10 uV
    abstol(I) = 100 pA
    temp = 0 C
    tnom = 27 C
    tempeffects = all
    errpreset = moderate
    method = trap
    lteratio = 3.5
    relref = alllocal
    cmin = 1 fF
    gmin = 100 pS


Notice from spectre at time = 4.03993 fs during transient analysis `tran'.
    Maximum value for quantity `I' has increased to 417.619 mA (detected at I777.I11:sigout_flow).
Warning from spectre at time = 12.393 ps during transient analysis `tran'.
    WARNING (SPECTRE-16191): Minimum time step used.  Solution might be in error.
Notice from spectre at time = 12.393 ps during transient analysis `tran'.
    Maximum value for quantity `I' has increased to 105.354 kA (detected at I777.I11:sigout_flow).
Warning from spectre at time = 12.393 ps during transient analysis `tran'.
    WARNING (SPECTRE-16191): Minimum time step used.  Solution might be in error.
Warning from spectre at time = 142.048 ns during transient analysis `tran'.
    WARNING (SPECTRE-16191): Minimum time step used.  Solution might be in error.
Warning from spectre at time = 142.048 ns during transient analysis `tran'.
    WARNING (SPECTRE-16191): Minimum time step used.  Solution might be in error.

    tran: time = 2.497 us     (2.77 %), step = 338.7 ns     (376 m%)
    tran: time = 7.68 us      (8.53 %), step = 1.8 us         (2 %)
    tran: time = 11.28 us     (12.5 %), step = 1.8 us         (2 %)

Warning from spectre at time = 15.2425 us during transient analysis `tran'.
    WARNING (SPECTRE-16191): Minimum time step used.  Solution might be in error.
        Further occurrences of this warning will be suppressed.
Warning from spectre at time = 15.2427 us during transient analysis `tran'.
    WARNING (SPECTRE-16266): Error requirements were not satisfied because of convergence difficulties.

    tran: time = 15.76 us     (17.5 %), step = 232 ns       (258 m%)
    tran: time = 20.27 us     (22.5 %), step = 35.14 ns      (39 m%)
    tran: time = 25.58 us     (28.4 %), step = 1.415 us     (1.57 %)
    tran: time = 29.32 us     (32.6 %), step = 160 ns       (178 m%)
    tran: time = 33.78 us     (37.5 %), step = 238.3 ns     (265 m%)
    tran: time = 38.52 us     (42.8 %), step = 528.7 ns     (587 m%)
    tran: time = 43.02 us     (47.8 %), step = 502.5 ns     (558 m%)
    tran: time = 47.27 us     (52.5 %), step = 123.7 ns     (137 m%)
    tran: time = 51.75 us     (57.5 %), step = 248.4 ns     (276 m%)
    tran: time = 56.36 us     (62.6 %), step = 358.6 ns     (398 m%)
    tran: time = 61.01 us     (67.8 %), step = 293.1 ns     (326 m%)
    tran: time = 65.25 us     (72.5 %), step = 13.48 ns       (15 m%)
```

My settings

This node is shown in Fig2_comparator block

Red lines show the convergence problems spectre is facing!!!!!