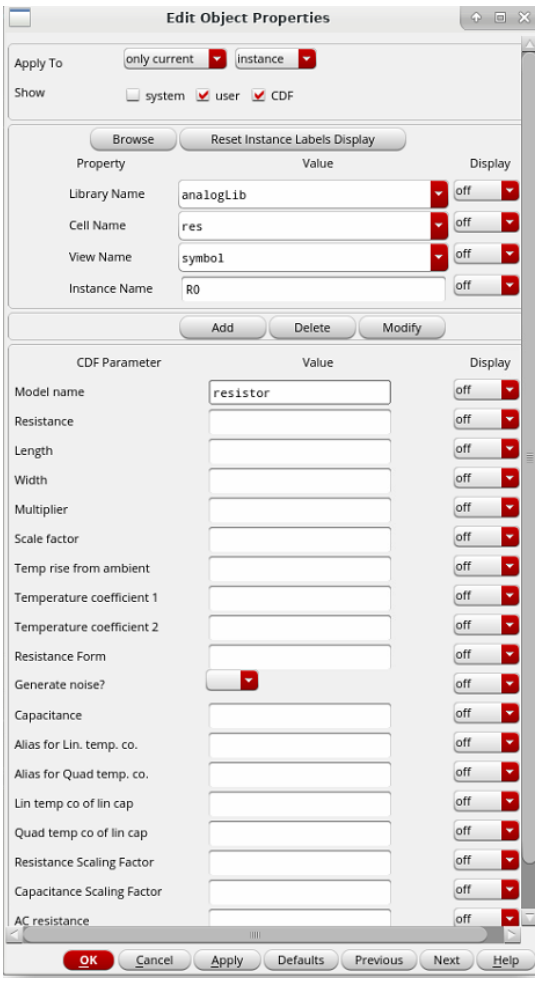
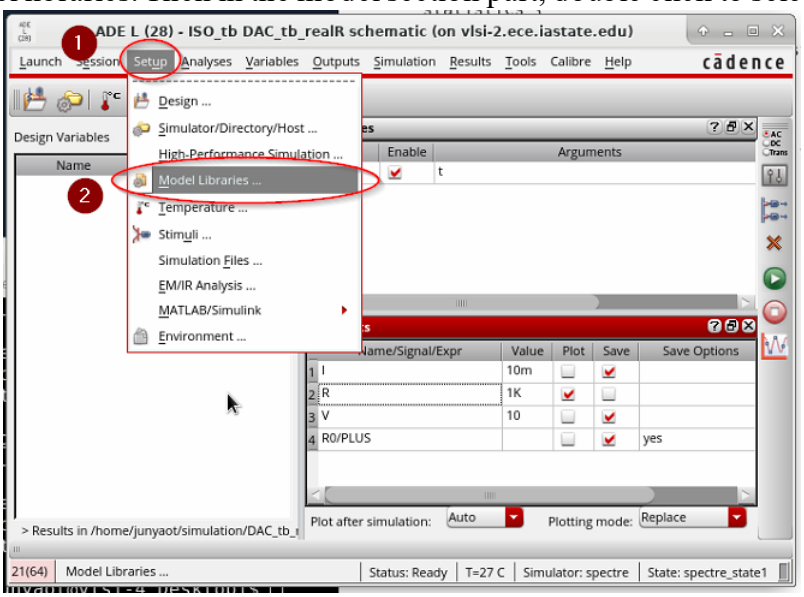
Thanks to Junyao Tang for putting this brief tutorial together !

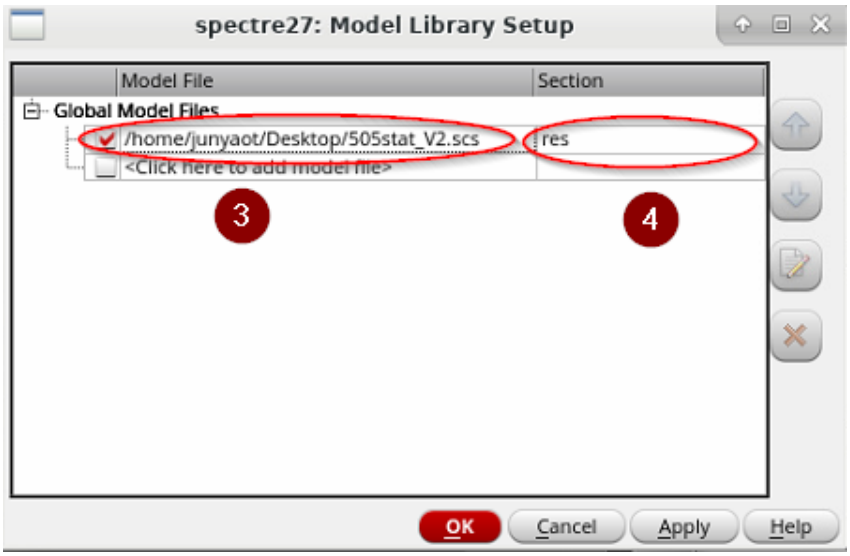
Spectre model file for Cadence Monte Carlo simulation

Step 1. When building your own schematic, please select "**res**" from "**analogLib**" library and typing "**resistor**" in the mode name.

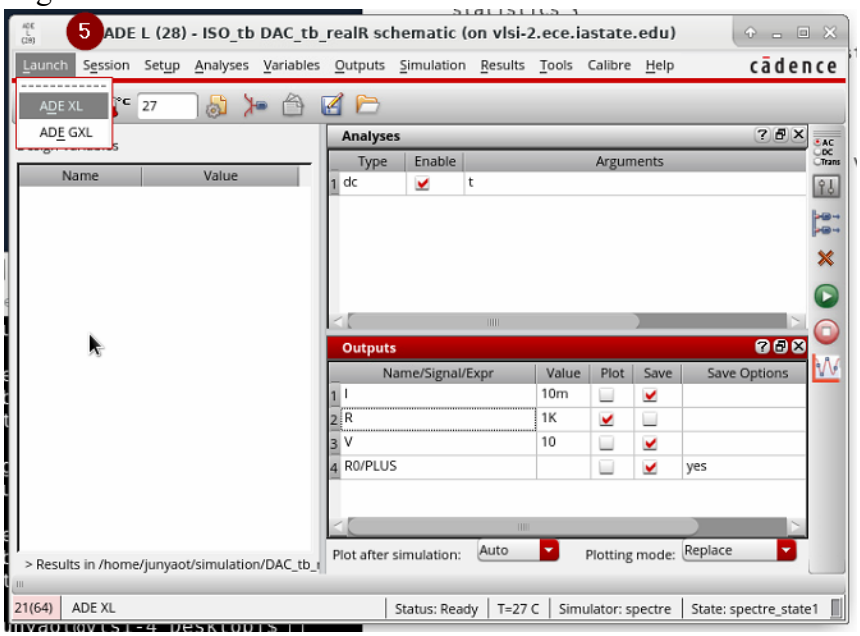


Step 2. To enable the spectre model in ADE L window, first specify the **505stat_V2.scs** as our model libraries. Then in the model section part, double click to select "**res**".

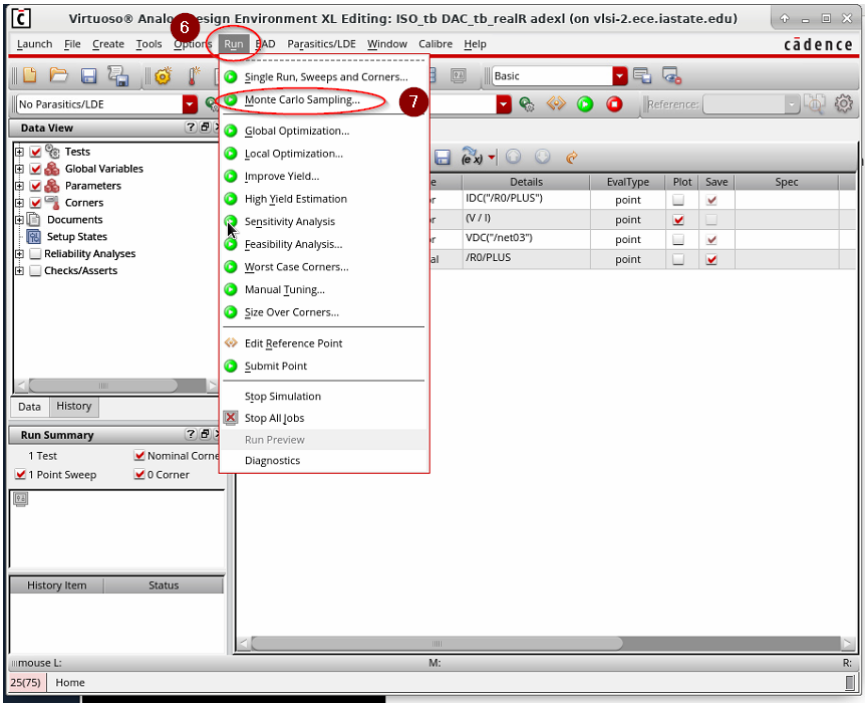


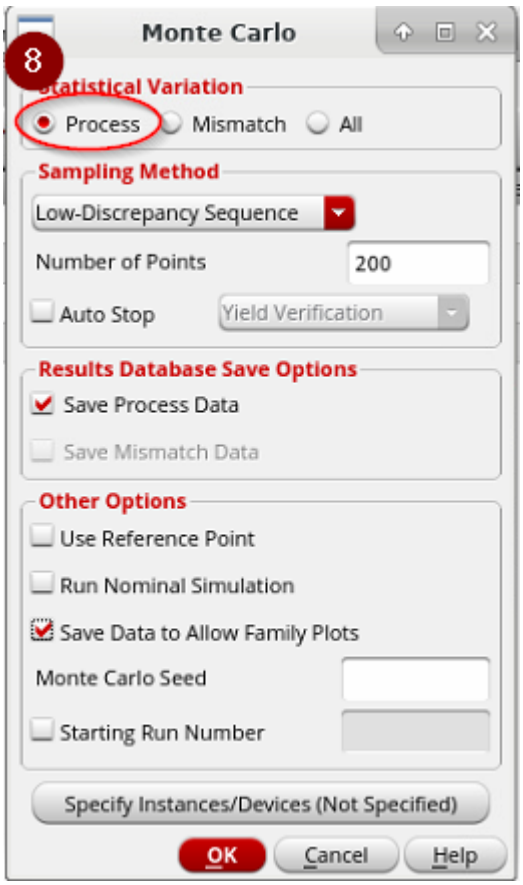


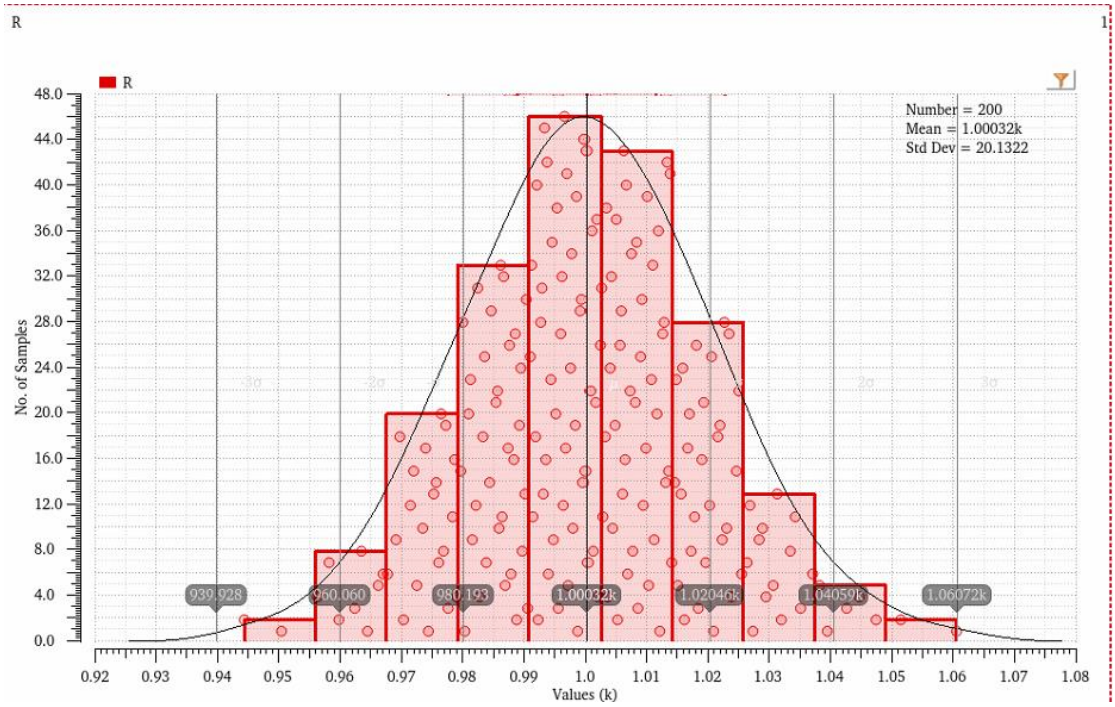
Step 3. Using ADE L to launch ADE XL.



Step 4. Start Monte Carlo simulation in ADE XL, specifying statistical variation with "**Process**" only.


Virtuoso® Analog Design Environment XL Editing: ISO_tb DAC_tb_realR adexl (on vlsi-2.ece.iastate.edu)
6
Launch File Create Tools Options Run BAD Parasitics/LDE Window Calibre Help
cadence
Single Run, Sweeps and Corners...
Monte Carlo Sampling...
7
Global Optimization...
Local Optimization...
Improve Yield...
High Yield Estimation
Sensitivity Analysis
Feasibility Analysis...
Worst Case Corners...
Manual Tuning...
Size Over Corners...
Edit Reference Point
Submit Point
Stop Simulation
Stop All Jobs
Run Preview
Diagnostics
Data View
Tests
Global Variables
Parameters
Corners
Documents
Setup States
Reliability Analyses
Checks/Asserts
Run Summary
1 Test
1 Point Sweep
0 Corner
History Item
Status
Details
EvalType
Plot
Save
Spec
IDC("/R0/PLUS")
(V / I)
VDC("/net03")
/R0/PLUS
point


Monte Carlo
8
Statistical Variation
Process
Mismatch
All
Sampling Method
Low-Discrepancy Sequence
Number of Points
200
Auto Stop
Yield Verification
Results Database Save Options
Save Process Data
Save Mismatch Data
Other Options
Use Reference Point
Run Nominal Simulation
Save Data to Allow Family Plots
Monte Carlo Seed
Starting Run Number
Specify Instances/Devices (Not Specified)
OK
Cancel
Help



How to modify resistor nominal value and standard deviation:

If you would like to modify the nominal resistance and standard deviation, use text editor to open the spectre model file "505stat_V2.scs". Change parameter "**nom**" for nominal resistance modification and change parameter "**stdparam**" for standard deviation modification.

```
simulator lang=spectre
section res
// *********************Parameter Definition*****************
        parameters var = 0              //random part of the resistor, zero for nominal condition
        parameters nom = 1000           //nominal part of the resistor, unit: ohm
        parameters stdparam = 20        //one sigma standard deviation value, unit: ohm

// *********************Monte Carlo Simulation Statement*****************
        statistics {
                process {
                        vary var dist=gauss std=stdparam percent=no     //Monte Carlo sampling setting, with gaussian distribution
                }
        }
// *********************Resistor and Resistance Definition*****************
        subckt resistor (p1 p2)
                R0 (p1 p2) resistor r= nom + var // total resistance equals to the sum of nominal part and random part
        ends resistor

endsection res
```