## **Cadence Spectre Model Library Tutorial**

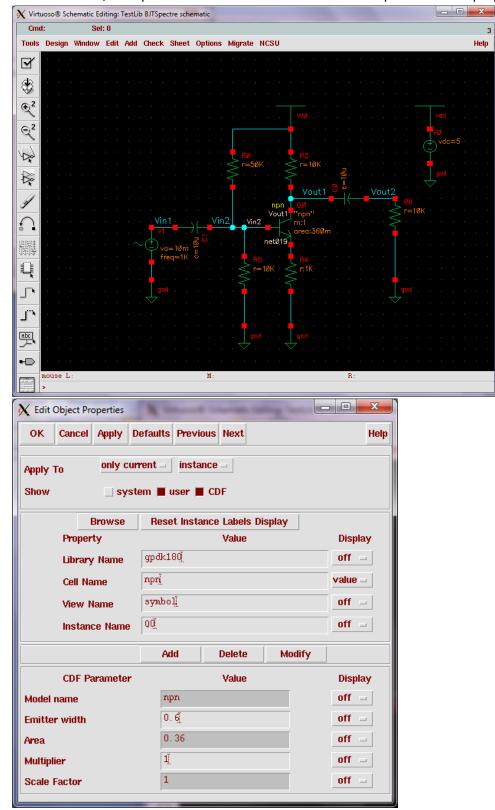
## Step 1: Edit "cds.lib" file

Recall Lab 1 early in the semester. To setup Cadence to the specific model library, you need to define or include the available model library. There are two level of "cds.lib" files set up, one in your home folder, another in your specific folder, i.e. EE330.

Here are the simplified steps

- 1. Open up the Linux terminal.
- 2. Goto your specified lab folder, i.e. EE330 or as you've defined in lab.
- 3. Type "gedit cds.lib" in the terminal.
- 4. Keep everything that's in there and add the following line: INCLUDE /remote/cadencelib/pdk180/gpdk180\_v3.2/cds.lib
- 5. Launch Cadence Virtuoso.
- 6. In the Library column, you should see "gpdk180" library

😹 Library Manager: WorkArea: /ho	me/alexIsh/CadenceTest	
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– Messages –		
to suppress this warning m Log file is "/home/alexlsh	essage. /CadenceTest/libManager.log".	



7. For illustrations, a simple BJT circuit is made. Notice that the npn BJT has the properties shown.

- 8. To define or analyze the Spectre model of the BJT, open up the Analog Design Environment.
- 9. Goto Setup -> Model Libraries to add/remove/edit the Model Library files.

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10. Note that the included model library files are read-only. But you can copy the parameters out and paste them to a new .scs file of your need.

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*********
   Generic PDK Bipolar models
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simulator lang=spectre
library gpdk
section bjt
model vpnp bjt type=pnp rbmod=spice minr=1e-60 bf=3.0 nf=1.0
                     is=2.4e-18 ise=2.4e-18
model npn bjt type=npn is=3.26E-16 va=60 bf=100
                     br=6 nc=2 ikr=100m rc=1 vje=0.7
                     cjc=le-12 fc=0.5 cje=0.7e-12
                     tr=200e-12 tf=25e-12 itf=0.03 vtf=7 xtf=2
model pnp bjt type=pnp is=3.28e-16 va=30 bf=35
                     br=6 nc=2 ikr=100m rc=1
                     cjc=le-12 fc=0.5 cje=0.7e-12
+
                     tr=200e-12 tf=65e-12 itf=0.03 vtf=7 xtf=2
endsection bjt
endlibrary gpdk
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```

The syntax in the model file for Spectre is fairly simple to read.

- simulator lang=spectre : This model is defined for Spectre simulator.
- library/endlibrary gpdk : Library name
- section/endsection bjt : Define section for the BJT model. Note that you can have multiple sections in one scs file.