

Sonnet/Virtuoso Interface Training



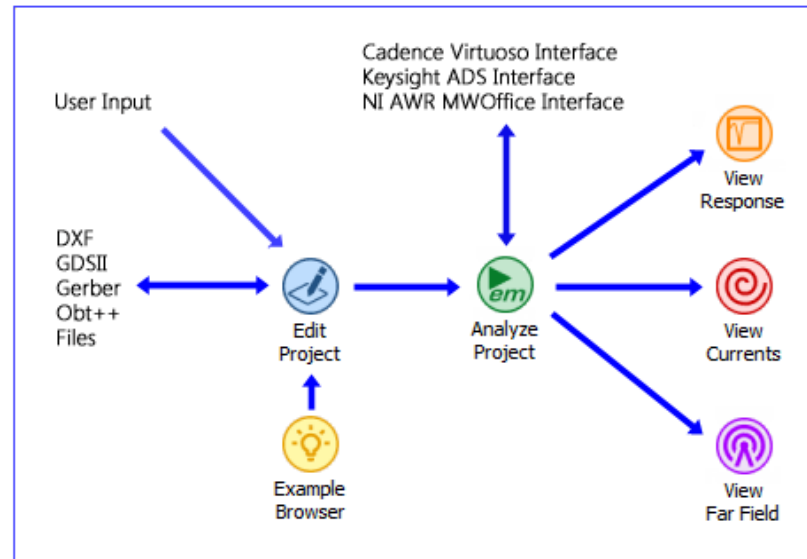
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- Sonnet Interfaces and Overview
- Virtuoso Interface and Capability
- Demo of Cadence Interface



Overview of All Sonnet Interfaces

Sonnet Interfaces and Overview

- **Cadence:**

- Connections Program Partner (Since 2002)
- Complete Virtuoso Suite Integration

- **Keysight:**

- Third-Party EDA Vendor, with integrated interface to ADS
- Keysight provides a Sonnet interface for Genesys Suite
- **New:** Support for Co-simulation in v17.

- **National Instruments/AWR:**

- EM Software Partner
- Integration with Microwave Office through the AWR EMSocket

- **Synposys:**

- Synopsys In-Sync Program member
- Sonnet SPICE extraction is fully compatible with Synopsys HSPICE

- **AutoDesk:**

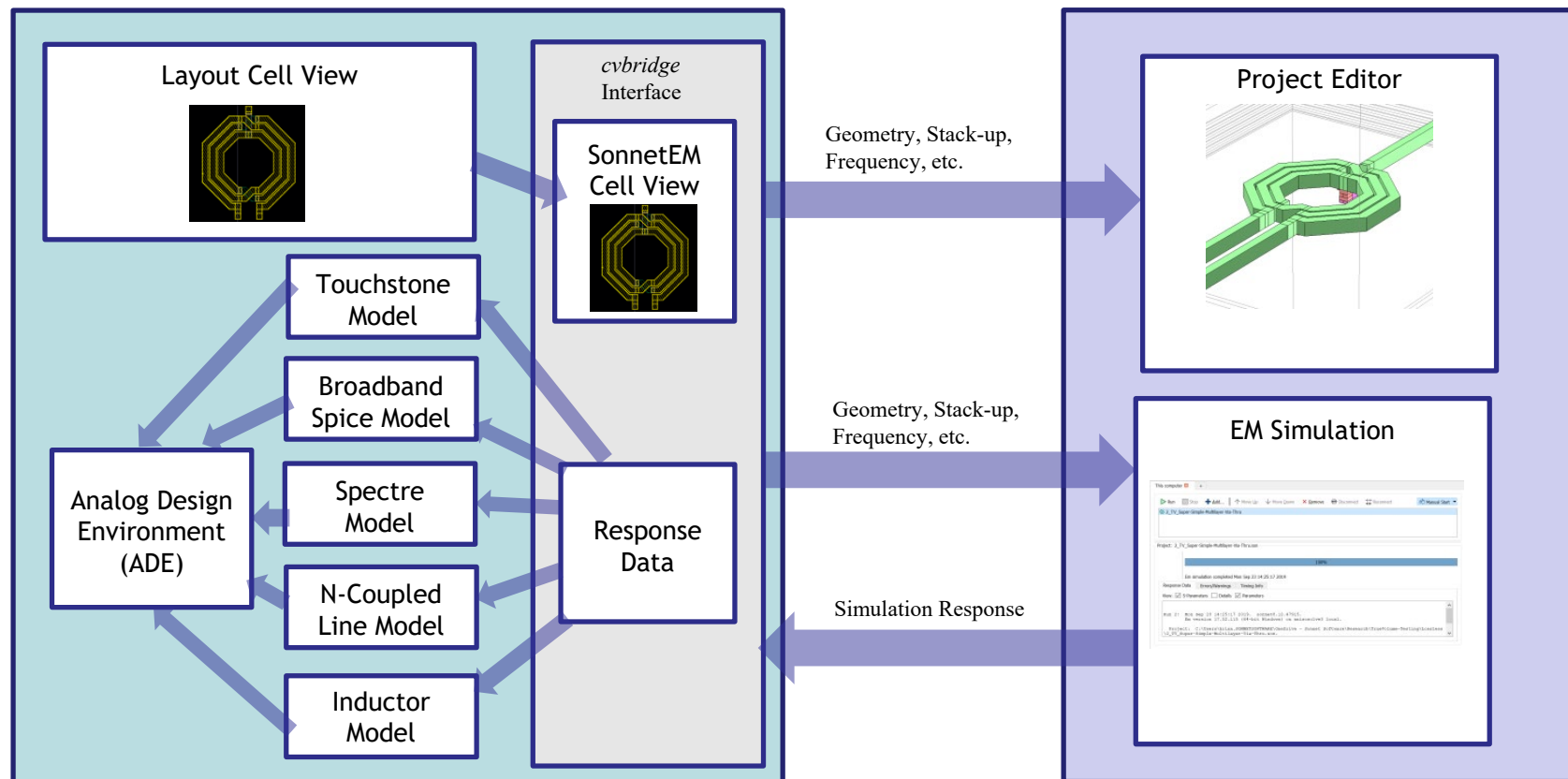
- AutoCAD Partner
- DXF format standards and interface

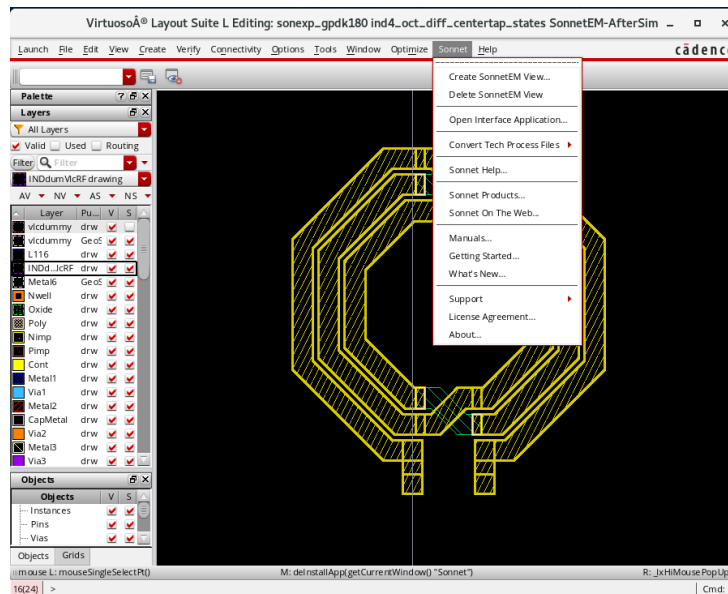
- **MathWorks:**

- MathWorks Connections Program Member
- Developed an API for automated operation of Sonnet from MATLAB

- Supported and cross-platform support on:
 - Windows
 - Red Hat Enterprise Linux
 - SuSe Enterprise Linux
- Multi-Core and multi-CPU support on x86 processors
- Node-Locked, LAN and WAN licensing capability
 - Remote display/Desktop and Remote simulation possible with LAN and WAN licenses
- Cluster computing

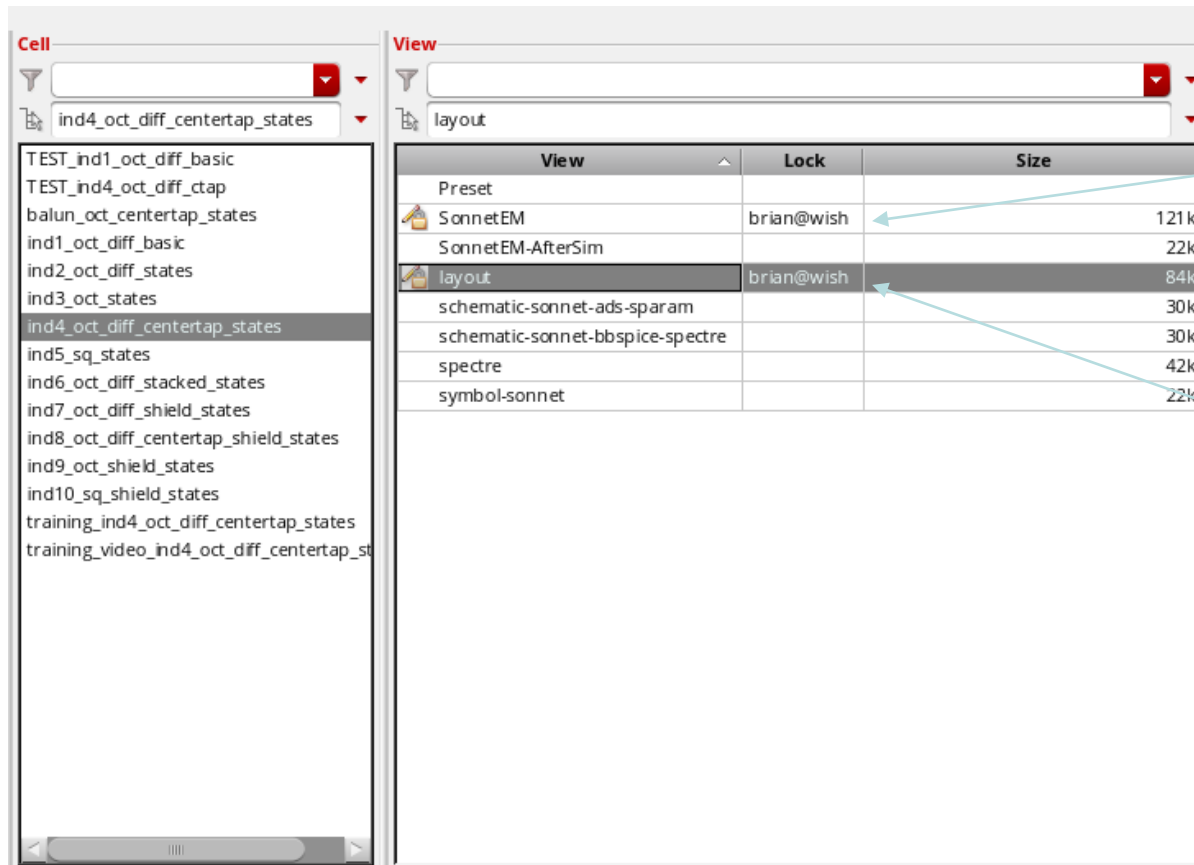
cadence





Overview of the Cadence Interface

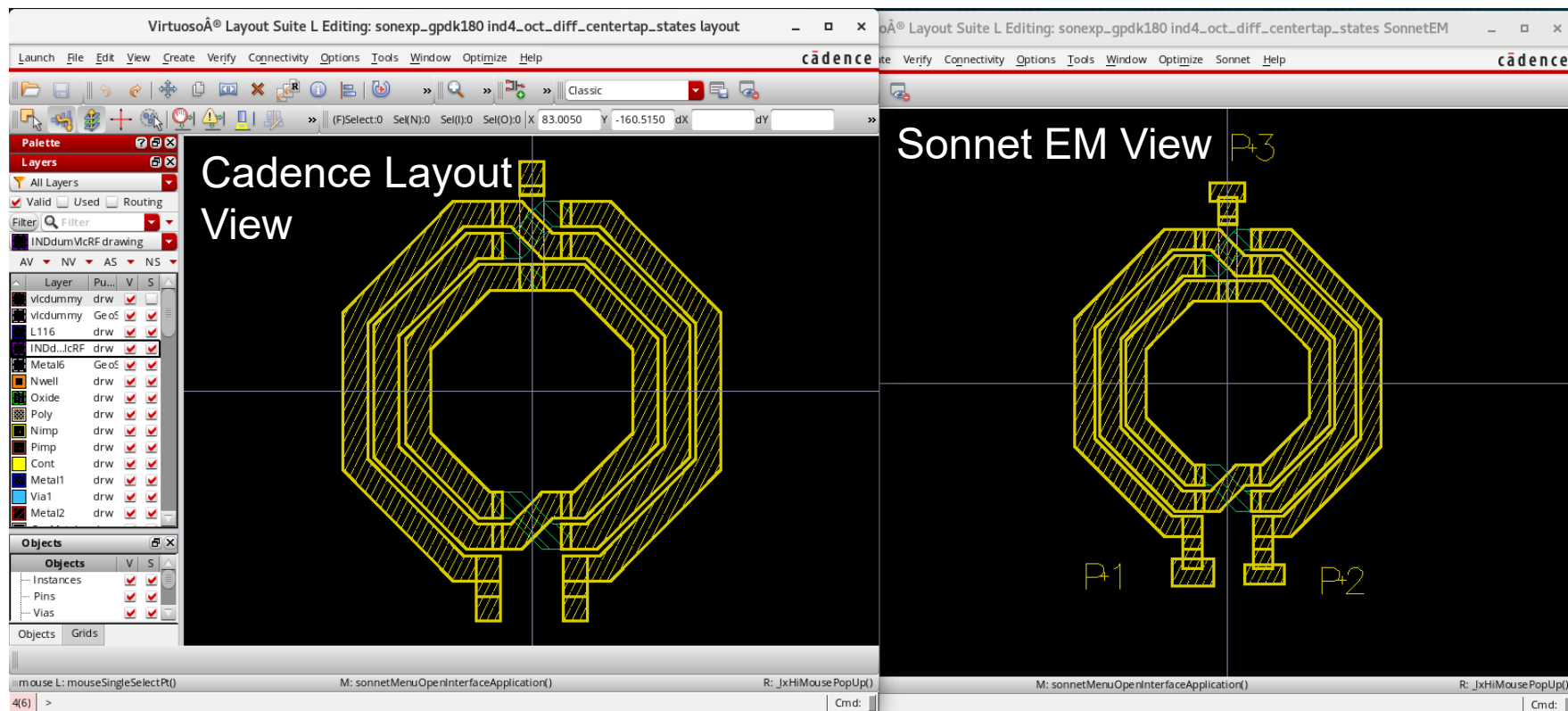
Virtuoso Interface and Capability



Sonnet EM View

Cadence Layout View

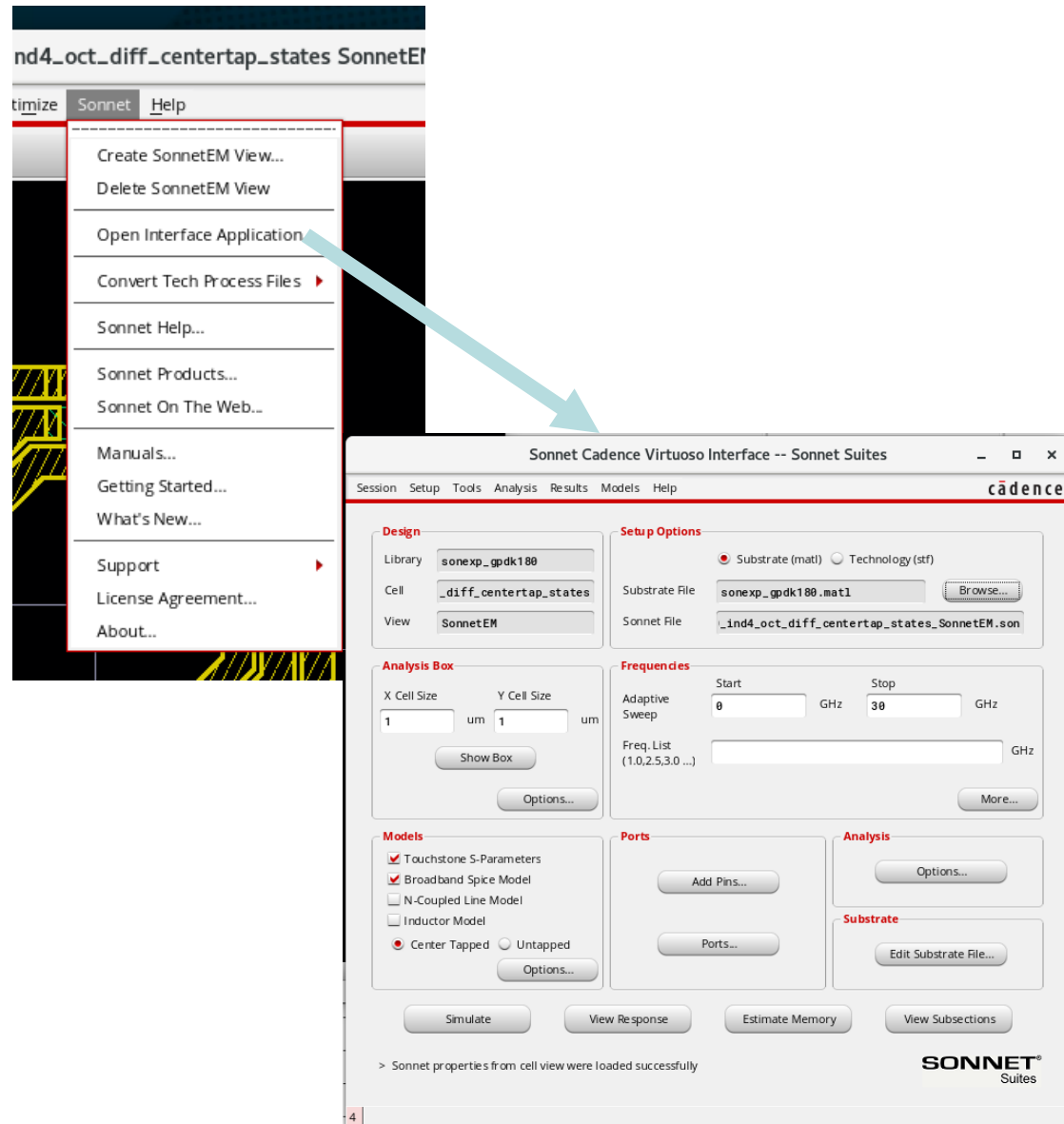
- Sonnet EM Views are generated from, and roughly analogous to Layout Views, however they keep the em-simulation settings.

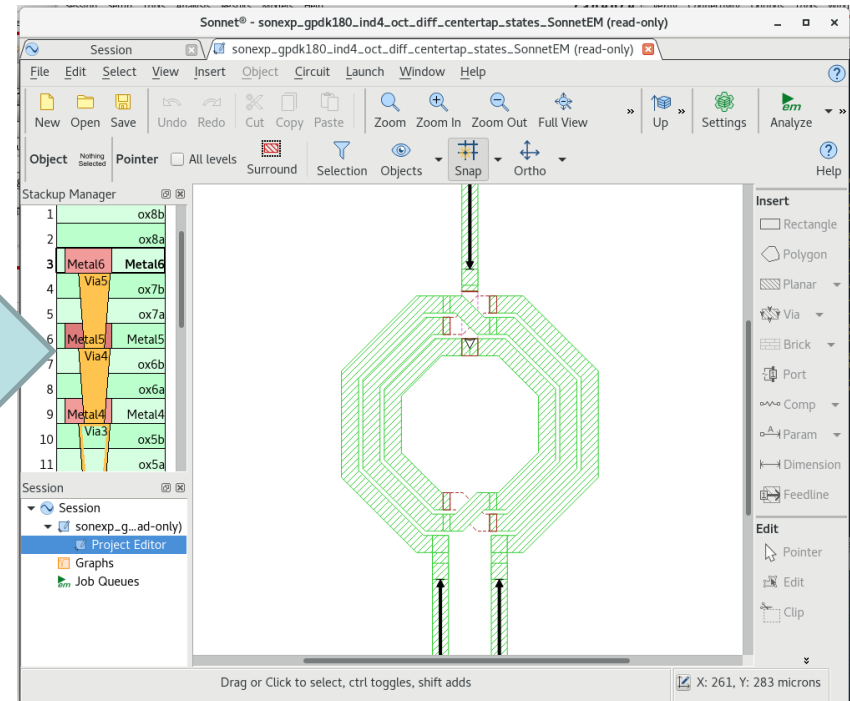
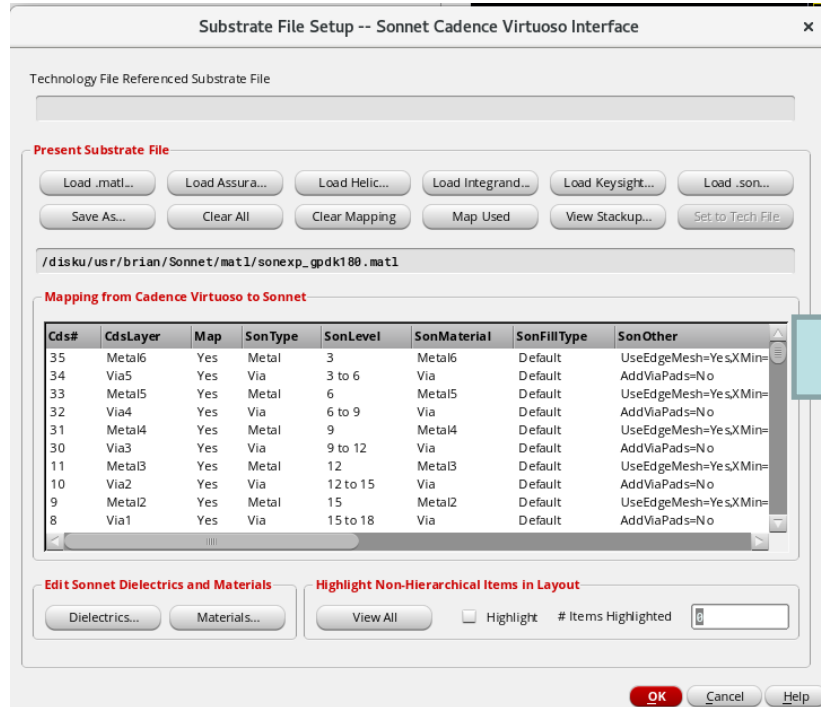


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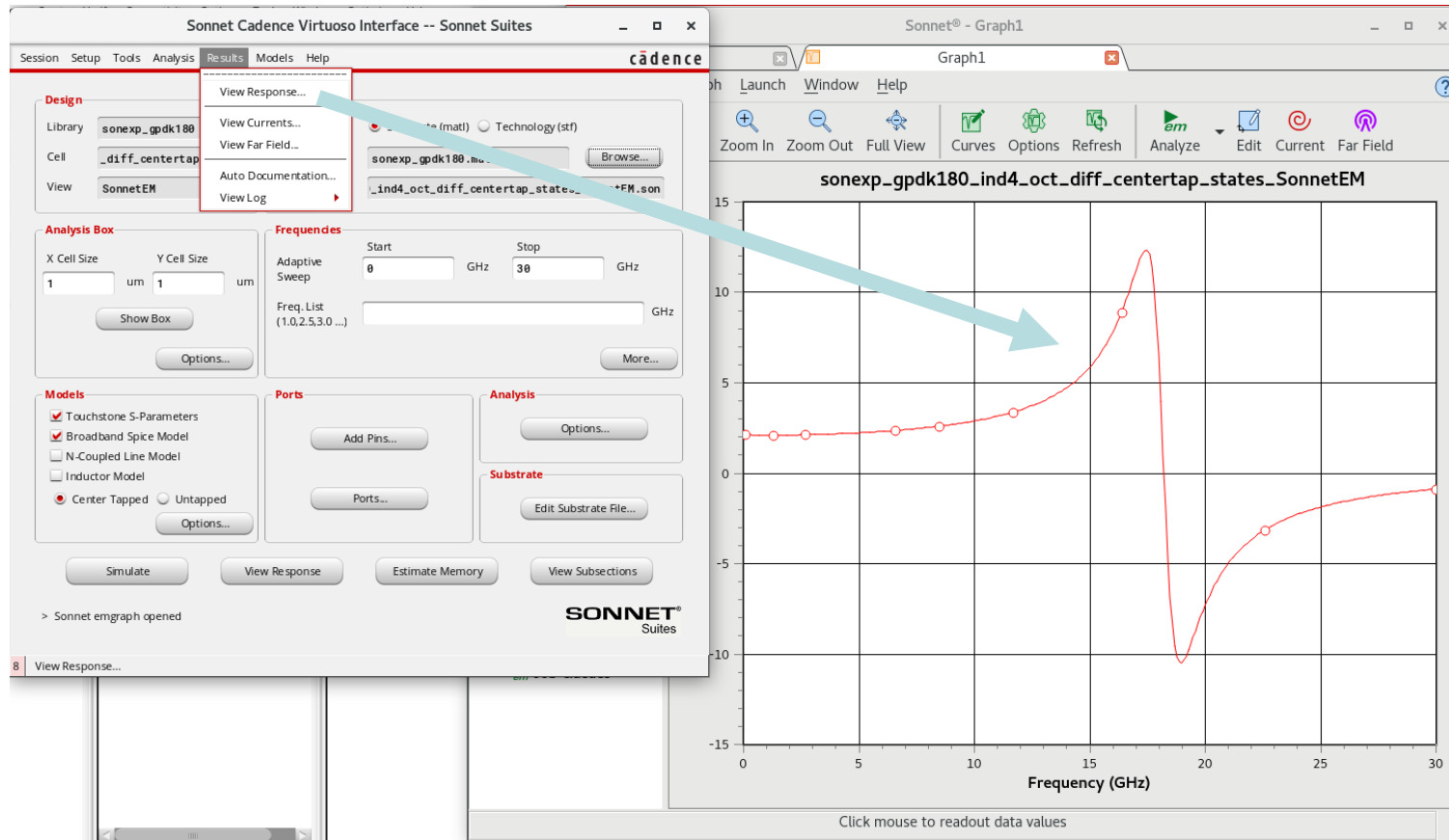
SONNET® Sonnet Virtuoso Interface Application

- From Sonnet→Open Interface Application...
- The interface window keeps all of the Sonnet EM Analysis settings in a convenient place

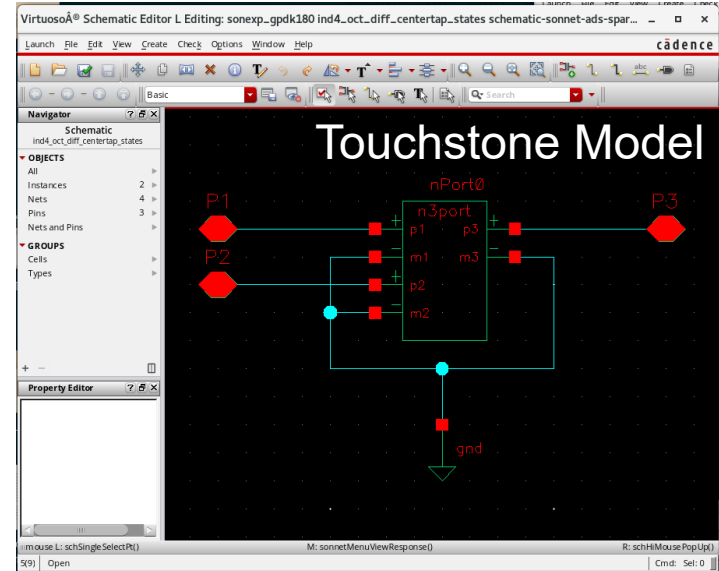
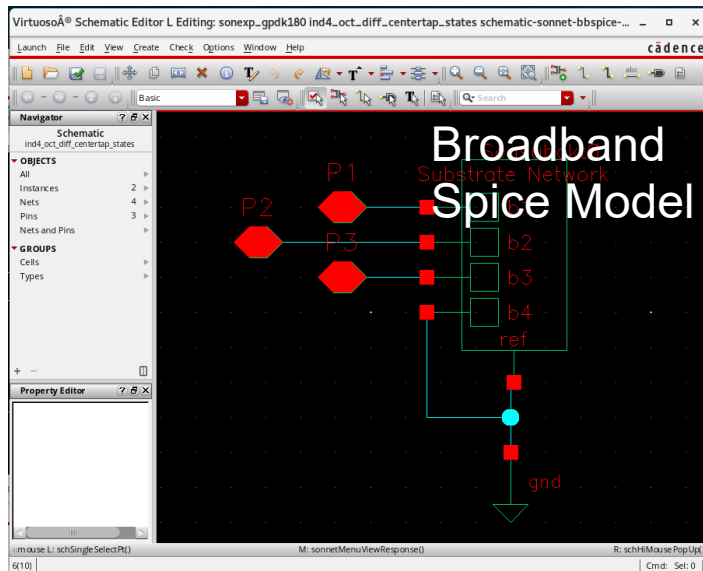




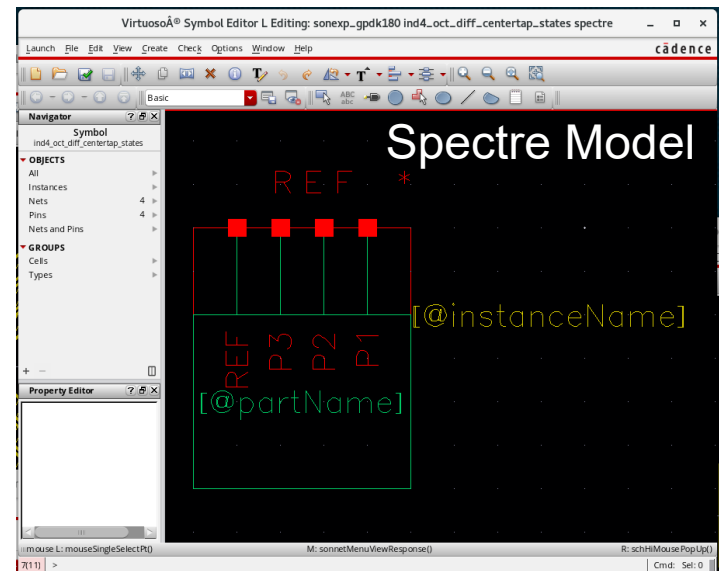
- For supported processes, .MATL and/or .STF files are available to simplify getting data relevant to electromagnetic simulation into Sonnet.



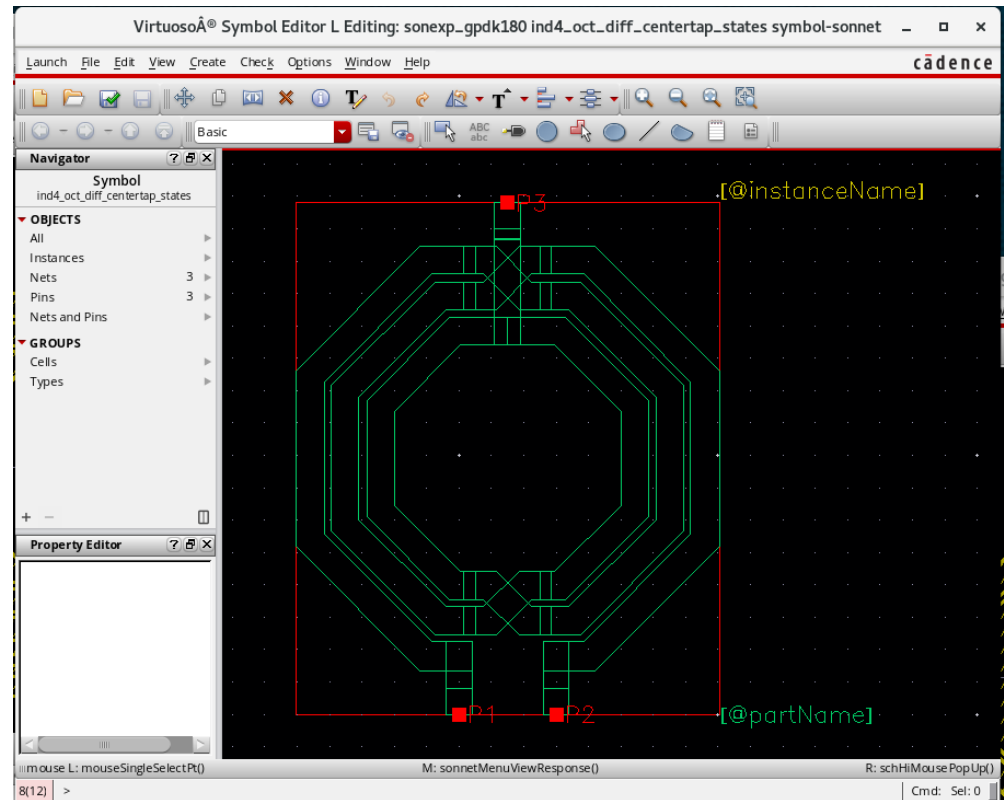
- Simulation Response can be viewed in Sonnet...

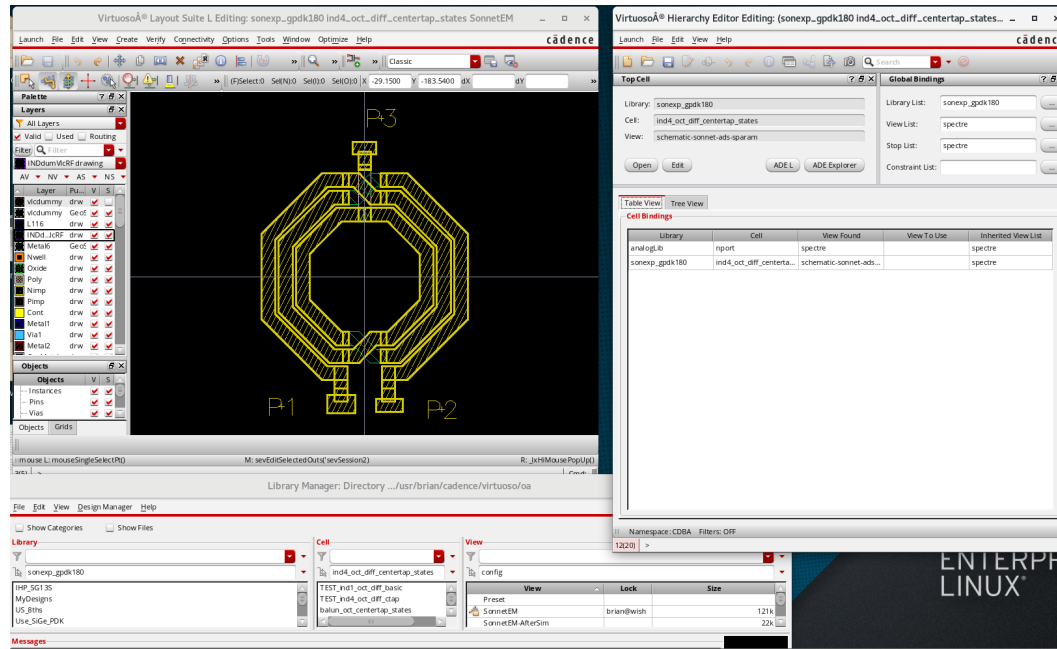


- Or models can be automatically pulled into Cadence.
- (N-Coupled-Line and Inductor Model not shown)



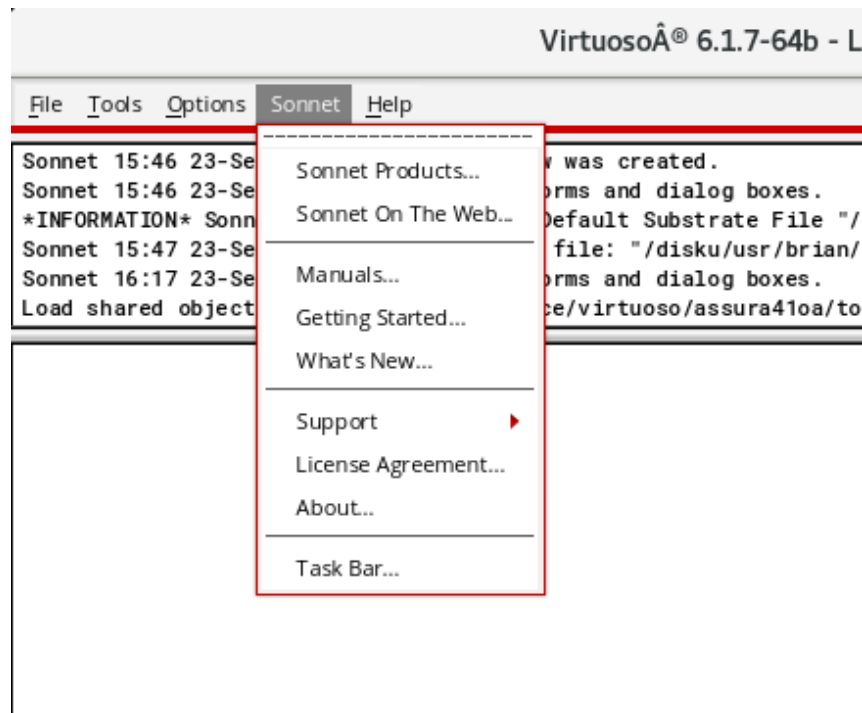
- For simplifying drawings, layout look-alike symbols may be used in many cases in the Virtuoso Analog Design Environment



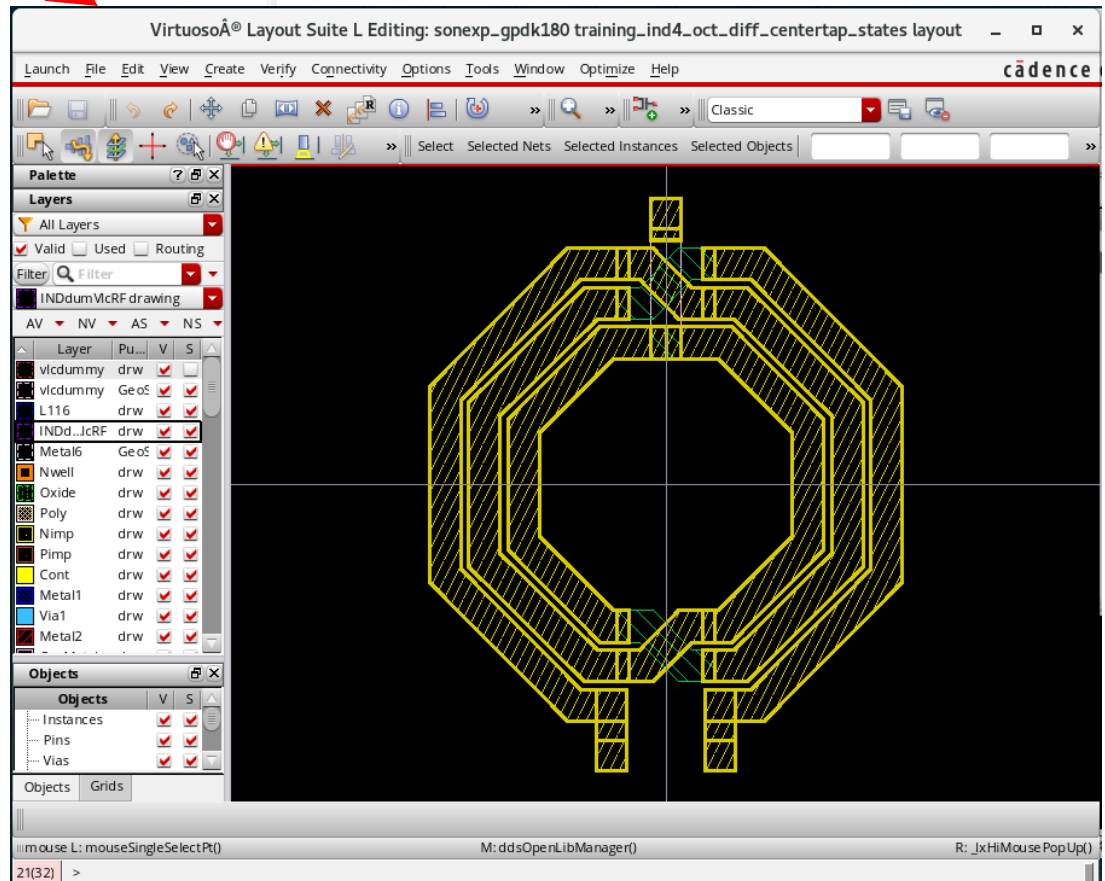
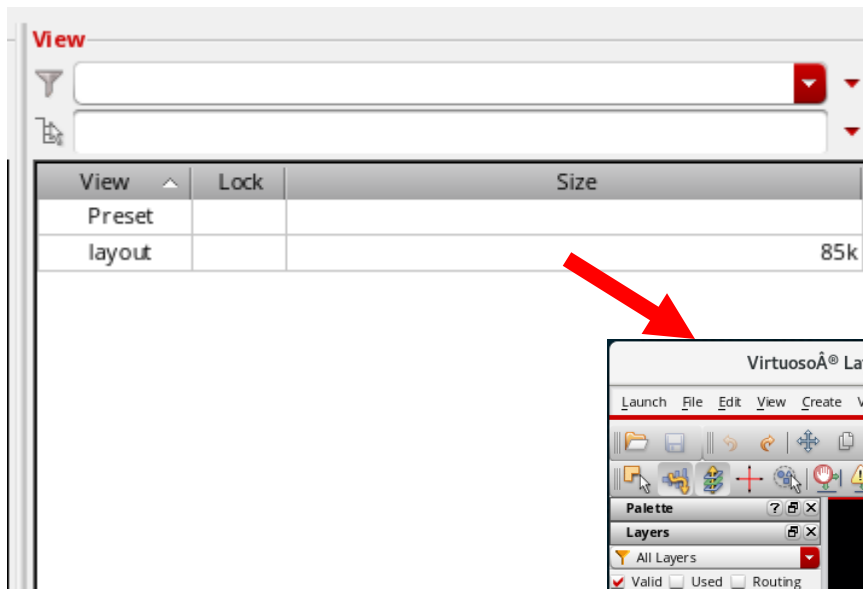


Demo of Cadence Interface

- The interface installs with Sonnet
- Cadence can be setup to load the interface when launched
- If loaded, this should appear:

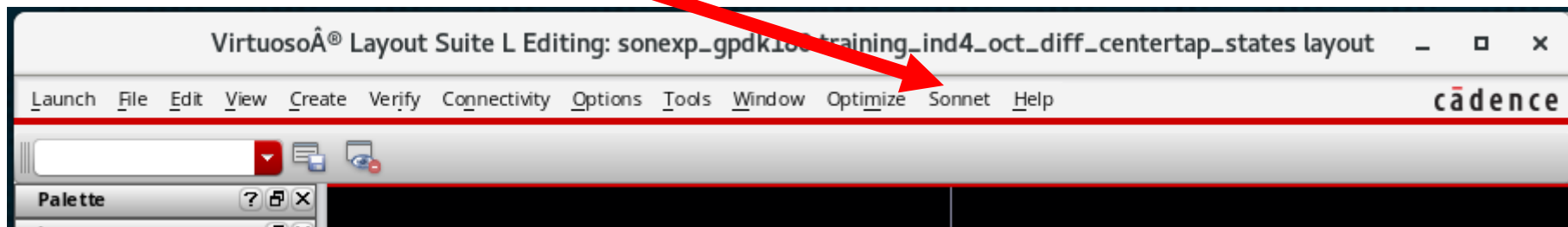
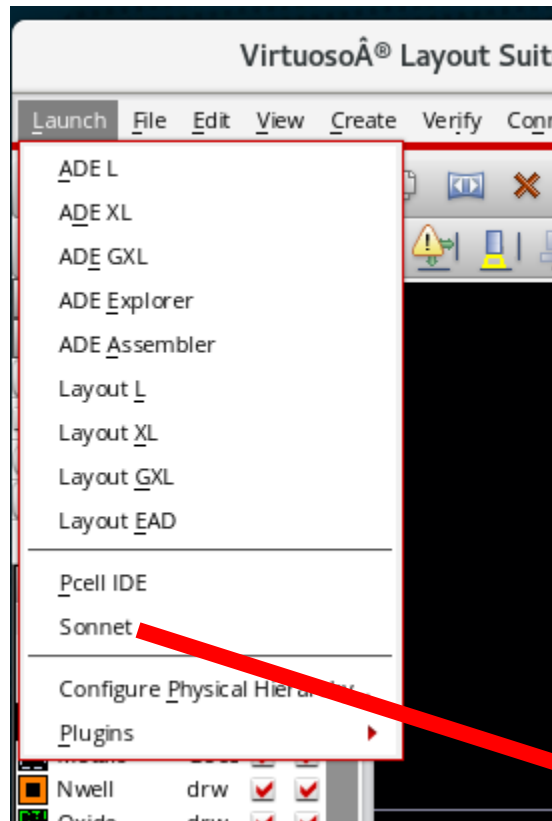


SONNET® Open the Sample Layout from the Library

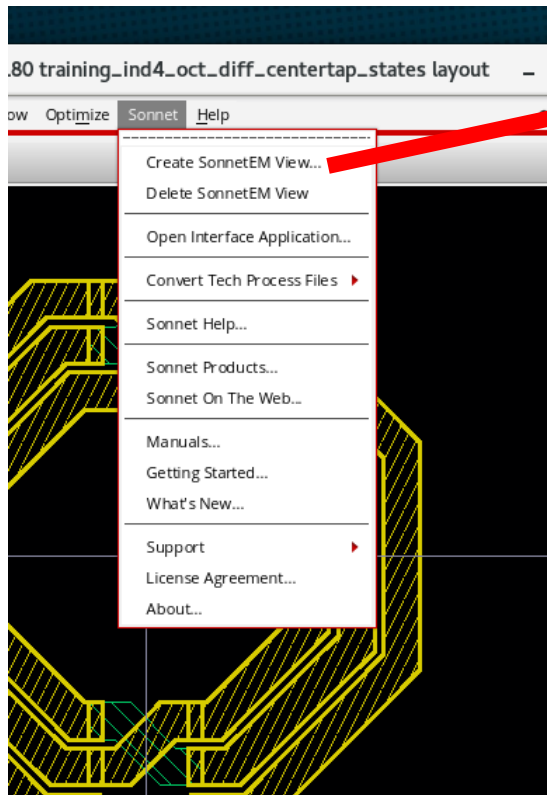


Launch Sonnet Interface

- The interface needs to be launched from the window you would like to use it in.
- The Sonnet pull-down appears once complete.



Create EMView



- Launch the wizard to create and emview

Create SonnetEM View From Layout View -- Sonnet Cadence Virtuoso Interface

Device Preset: **Inductor - Center Tapped**

Original Layout		Destination Layout	
Library	sonexp_gpd180	Library	sonexp_gpd180
Cell	14_oct_diff_centertap_states	Cell	14_oct_diff_centertap_states
View	layout	View	SonnetEM

Capture Layout Run Functions Options

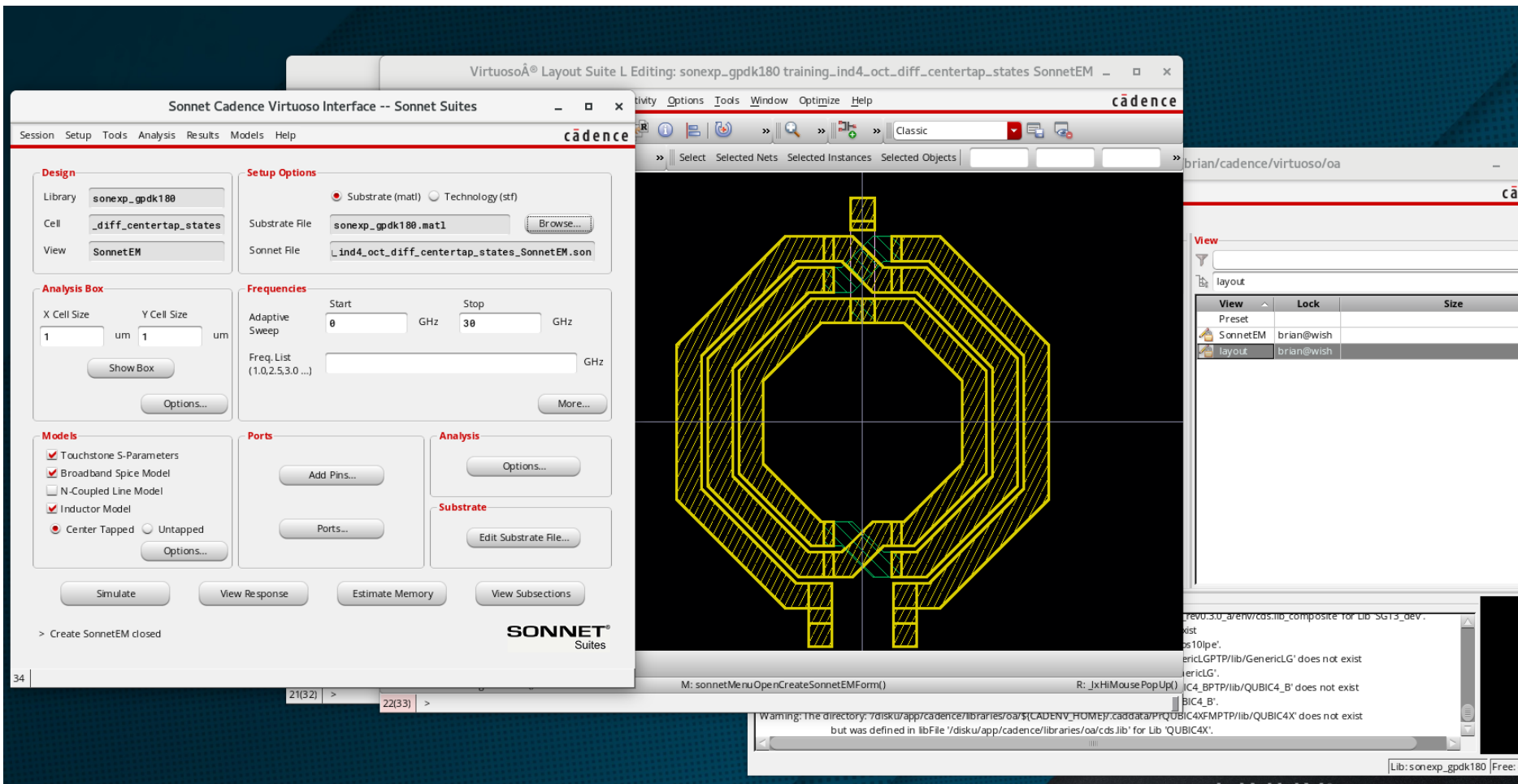
Analysis Target

☒ Whole Cellview
 ☐ Selected Objects
 ☐ Defined Region
 ☐ Present Zoom

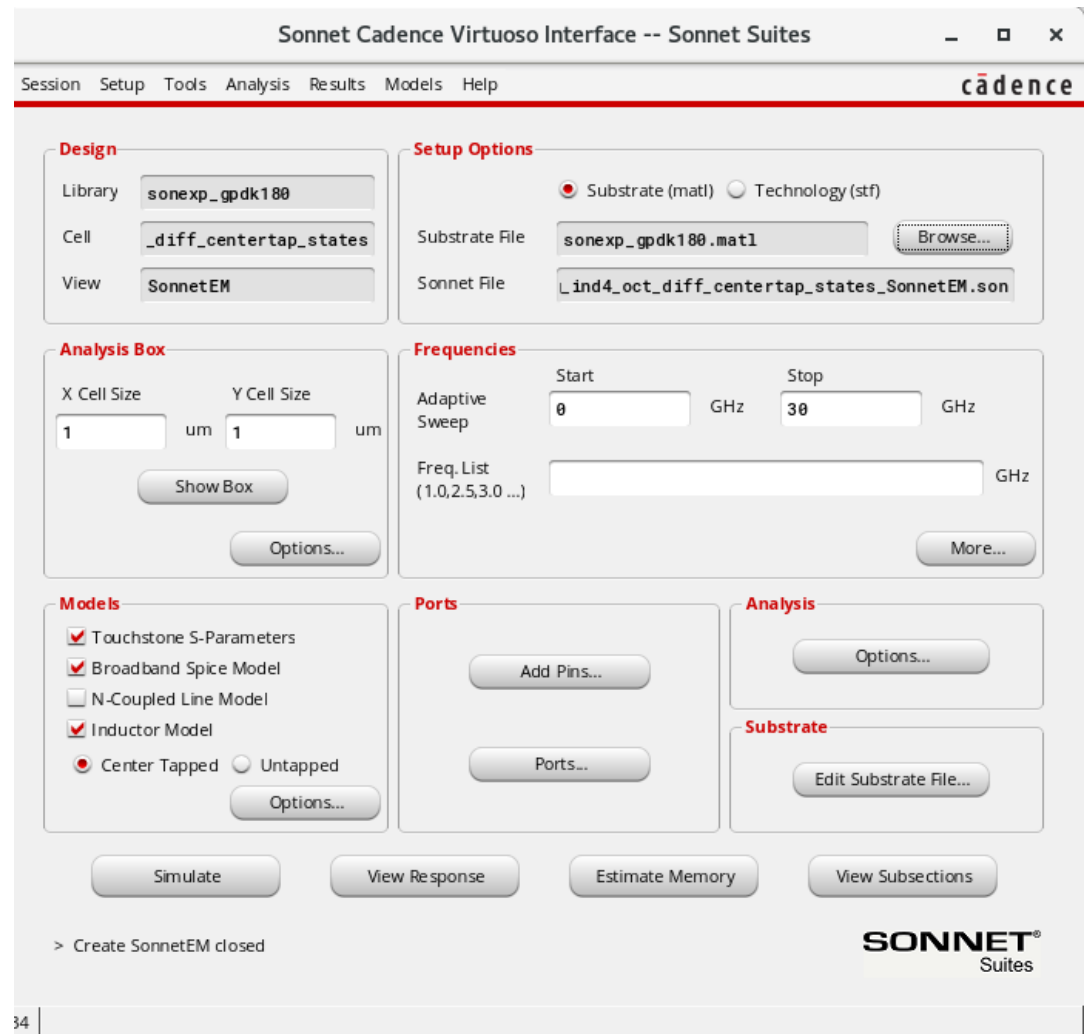
Analysis Target Options

When you press the OK button, the entire layout including instances, polygons, pins, etc. will be copied over to the SonnetEM view and flattened.

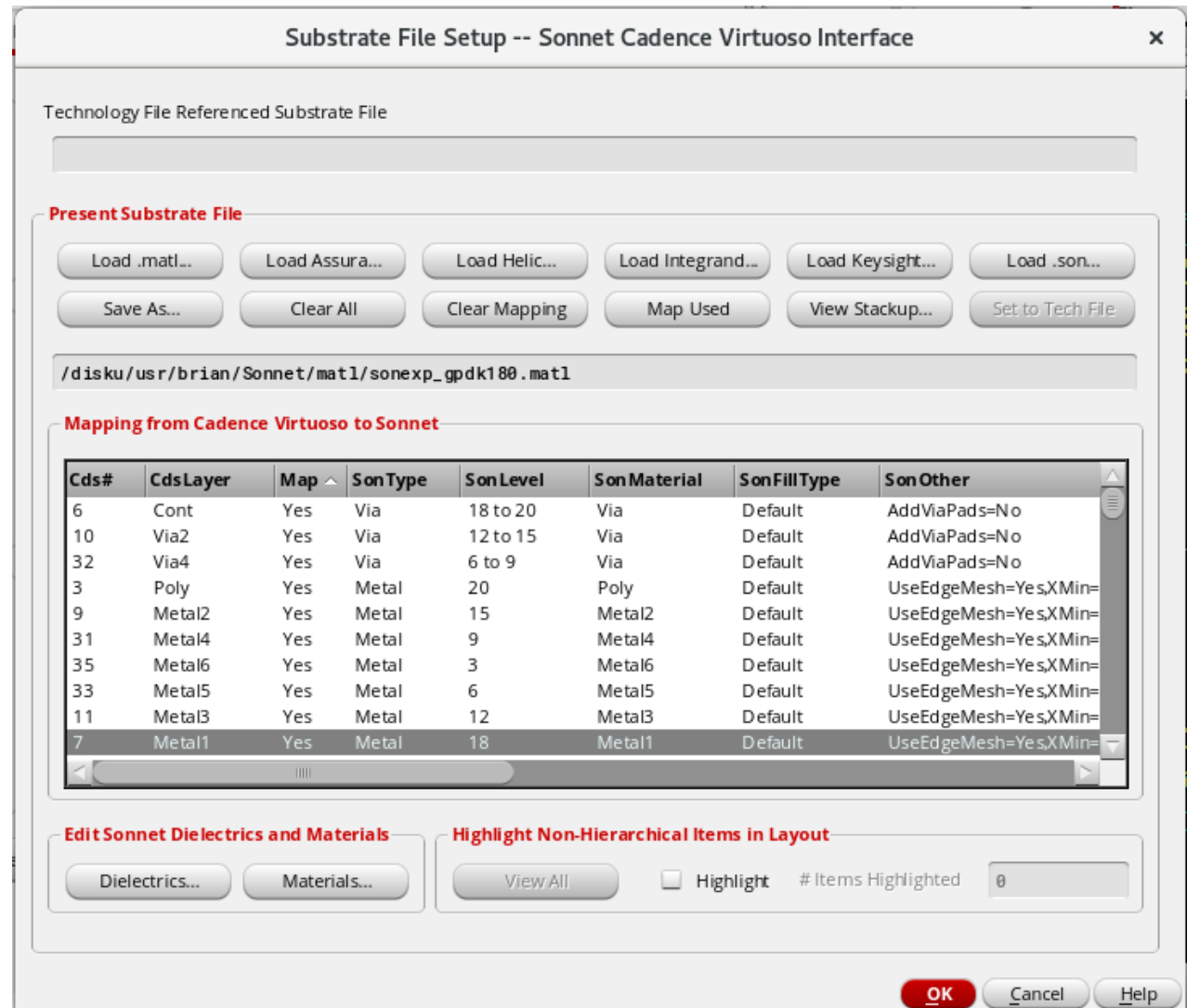
OK Cancel Defaults Help



- Sonnet controls are accessible in cadence through the interface application
- We will use it to add ports and substrate files to the circuit



- GPDk180 is a generic PDK useful for examples
- It is loaded and the layers are mapped



Add Pins

Create Pin

Mode: ☒ Manual ☐ Auto

Connectivity: ☒ Strong ☐ Weak

Terminal Names: ☐ Physical Only

☐ Keep First Name X Pitch: Y Pitch:

☒ Create Label

☐ Create as ROD Object

Name:

Pin Shape: ☒ rectangle ☐ dot ☐ polygon ☐ circle

I/O Type: ☐ input ☐ output ☒ inputOutput ☐ switch
☐ jumper ☐ unused ☐ tristate

Snap Mode:

Access Direction: ☒ top ☒ bottom ☒ left ☒ right
☒ any ☐ none

Signal Type:

Set Pin Label Text Style

Height:

Font:

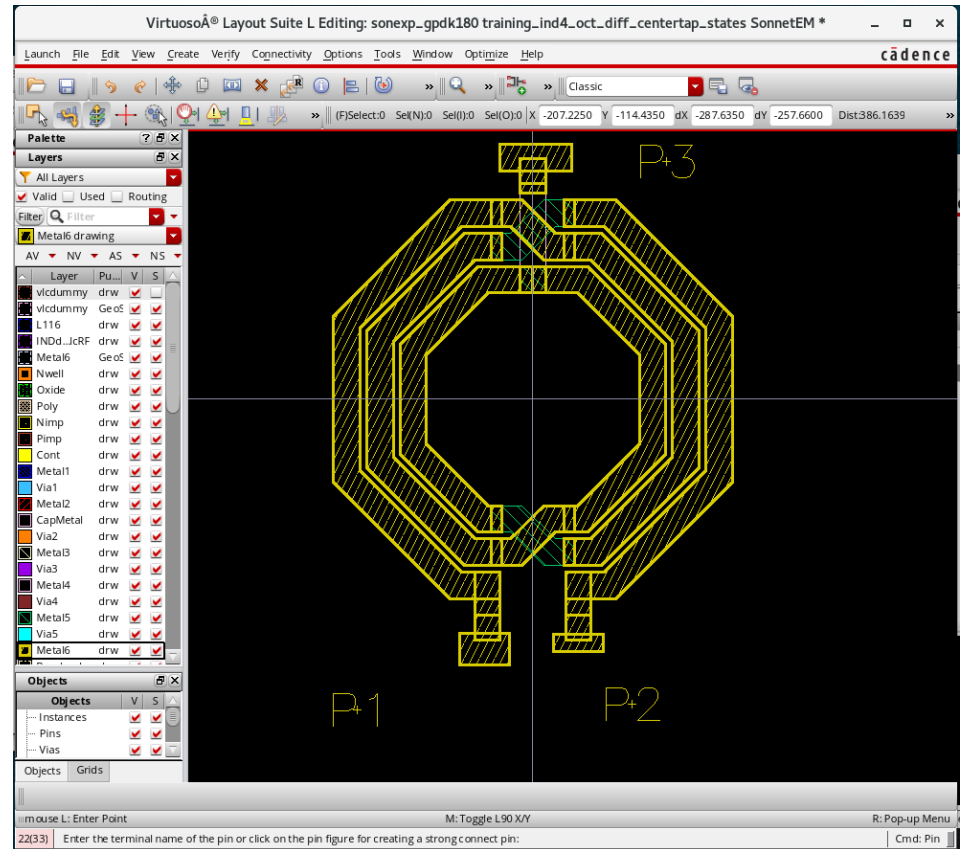
Text Options: ☐ Drafting ☐ Overbar ☒ Create As Label

Layer Name: ☐ text ☒ Same As Pin

Layer Purpose: ☐ drawing ☒ Same As Pin

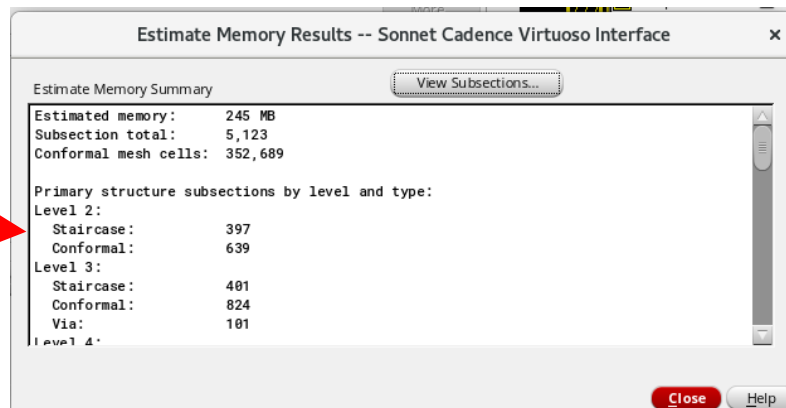
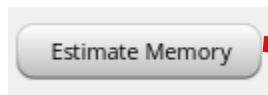
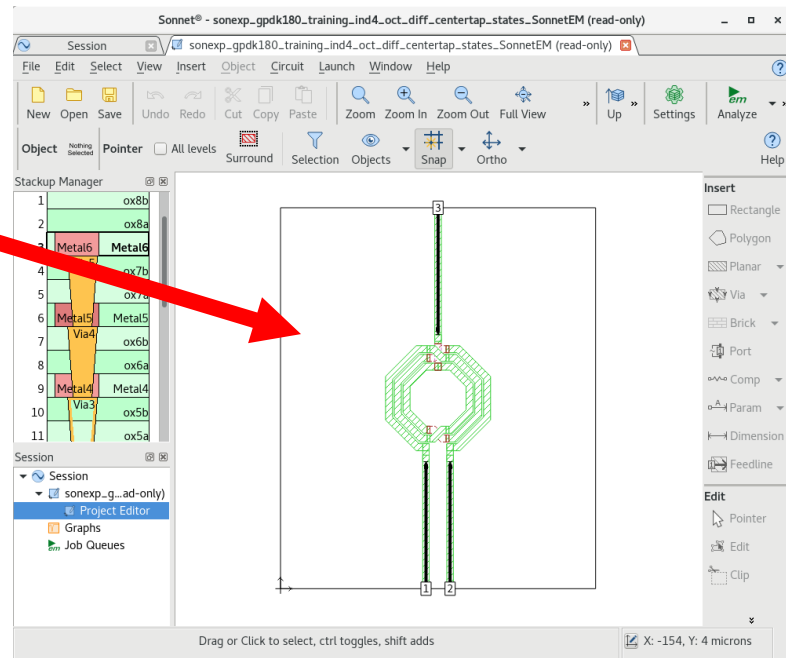
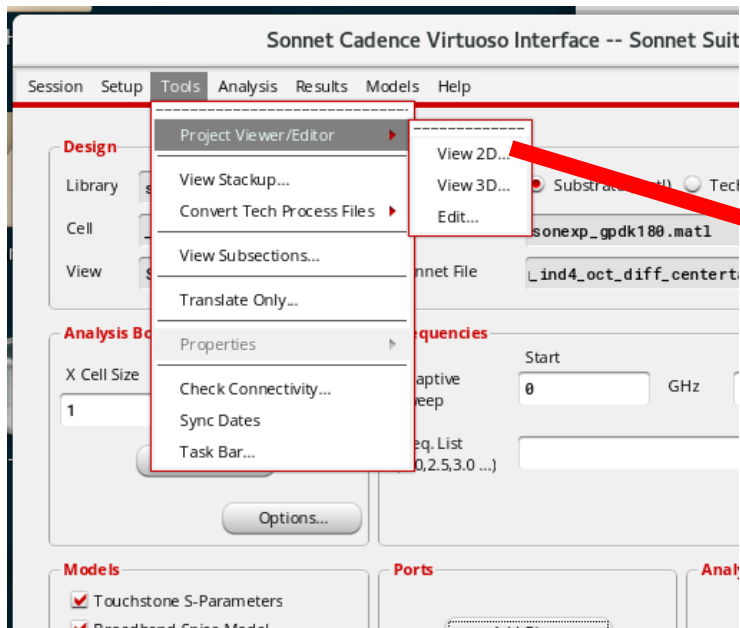
Justification:

Orientation:

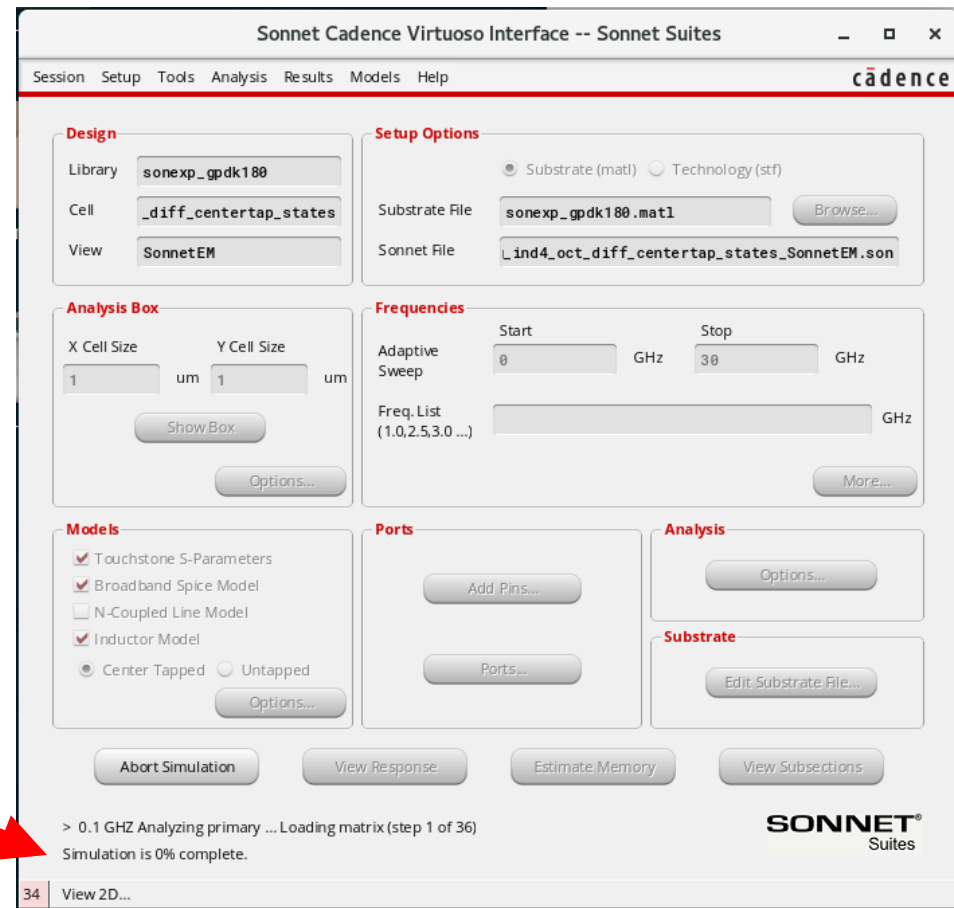
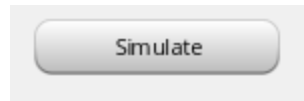


- After selecting options and metal level, click and drag in the layout editor.

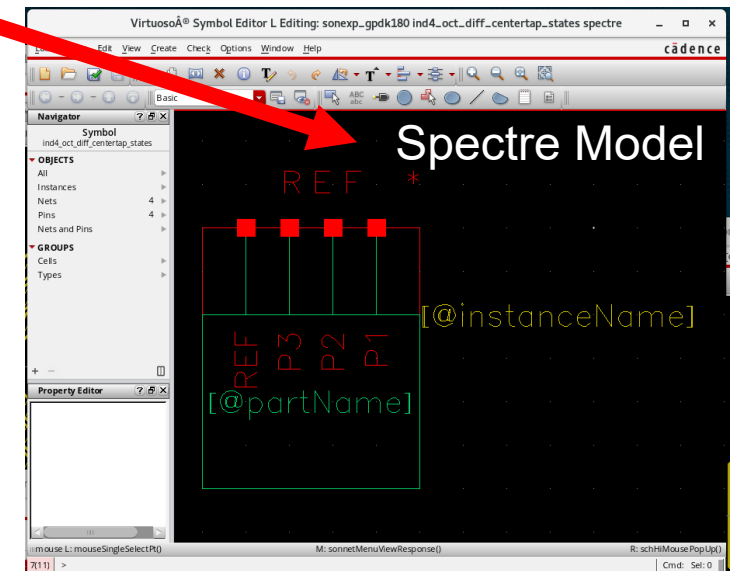
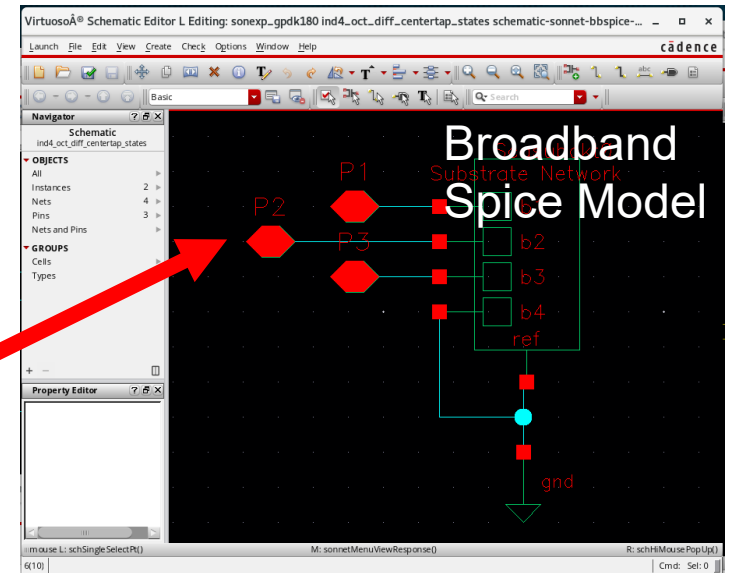
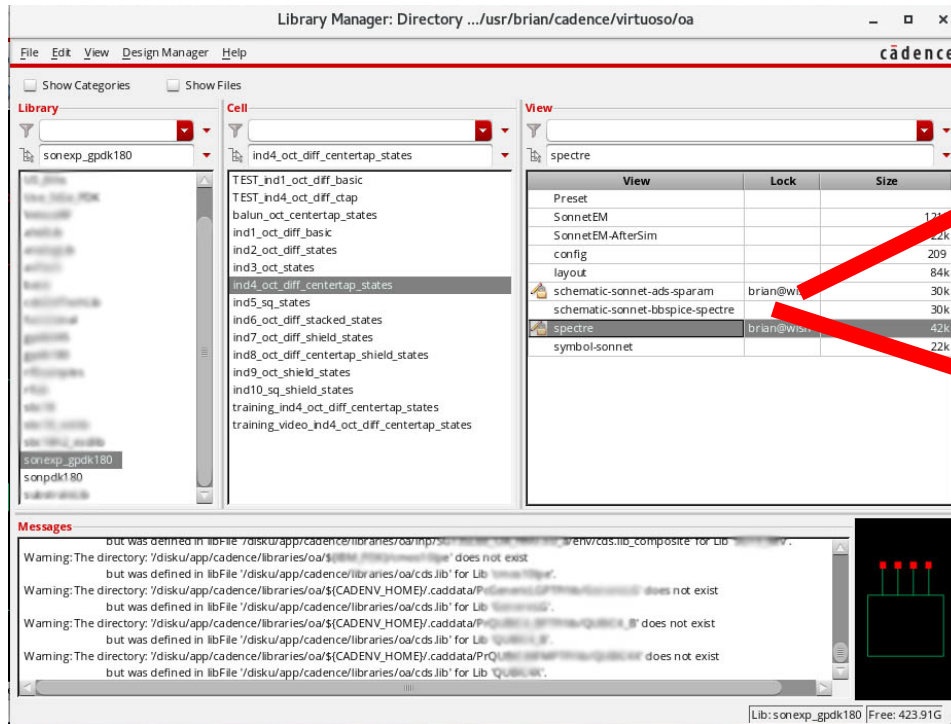
Check the Layout in Sonnet



- Hit simulate and it will call and run Sonnet in the background.
- The window can be closed and the simulation will continue.



View Models



- Thank you for your time!
 - Any questions or comments?



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