Sonnet/Virtuoso Interface Training

ELECTROMAGNETICS
SPECIALISTS

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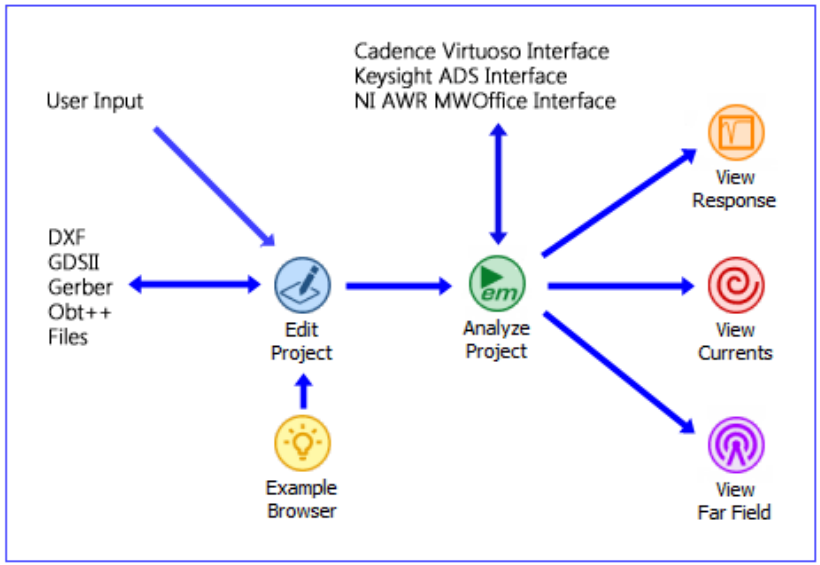
Training Overview

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



Overview of All Sonnet Interfaces

Sonnet Interfaces and Overview

Strategic Partnerships and Interfaces

- **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

Sonnet Platform Support

- 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

Sonnet Cadence Virtuoso Interface Flowchart

cadence

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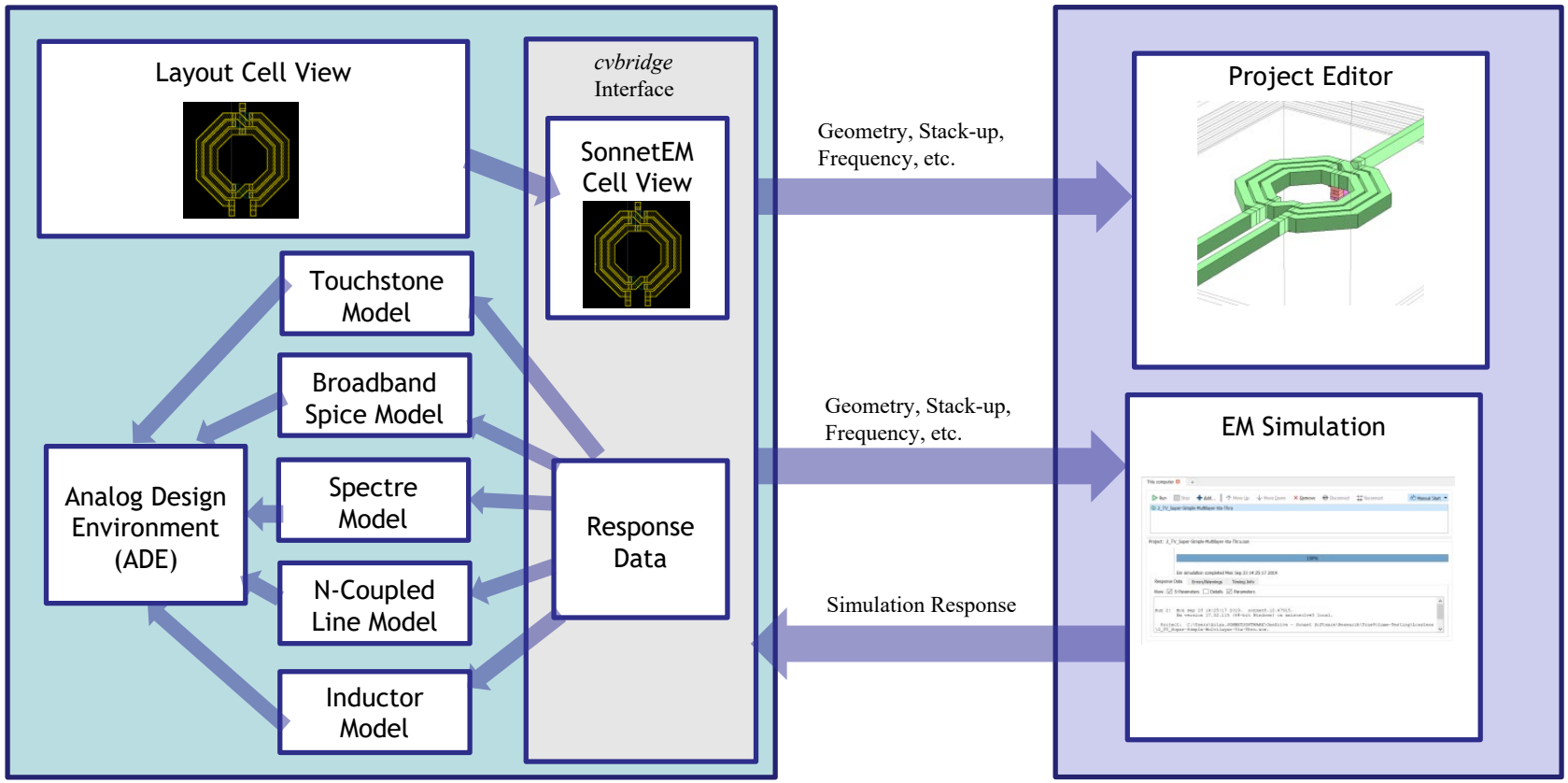
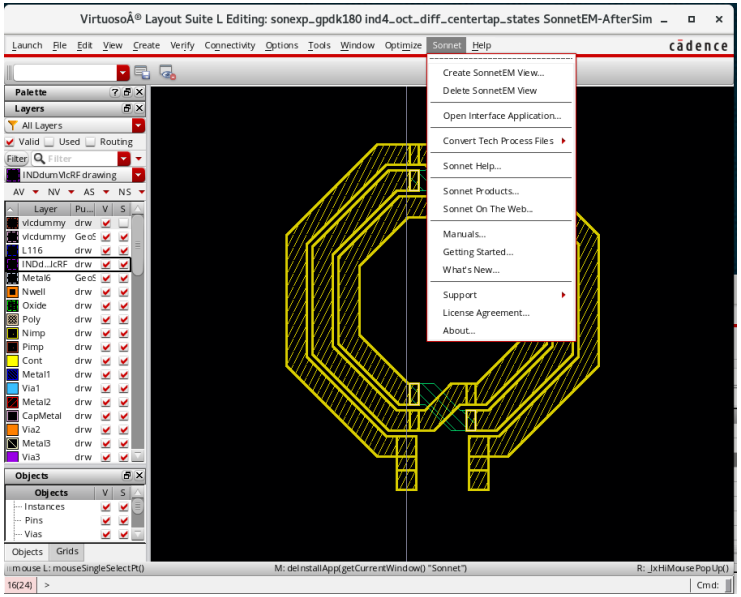
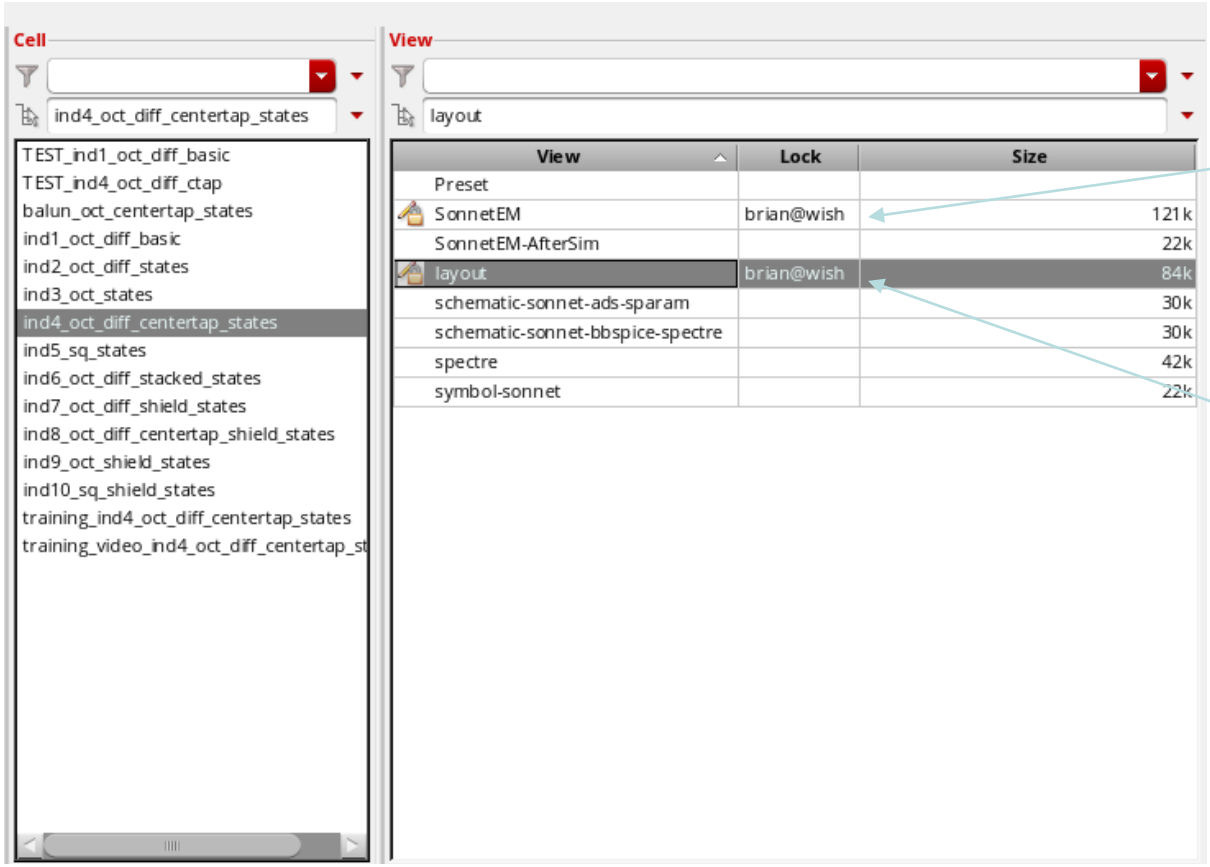




Overview of the Cadence Interface

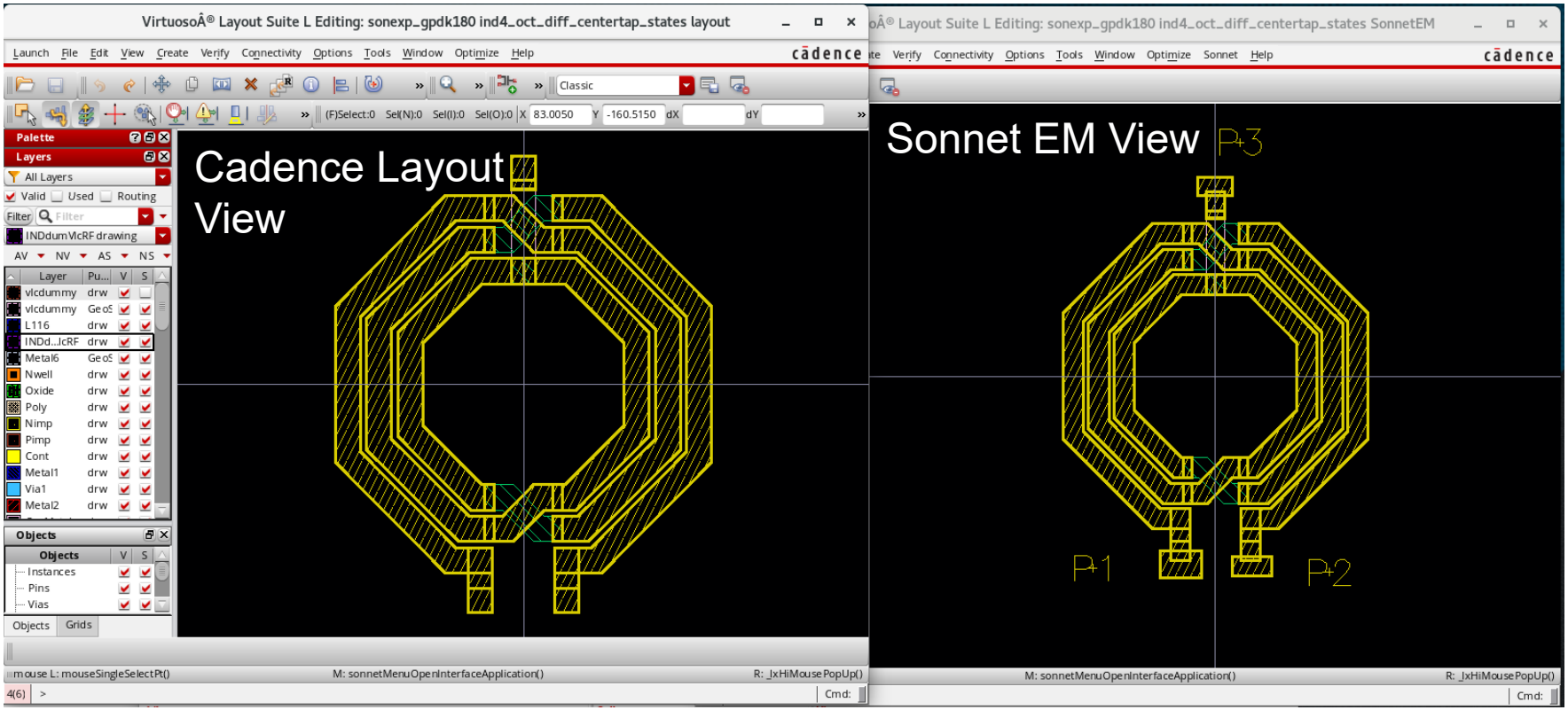
Virtuoso Interface and Capability

Sonnet EM View



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

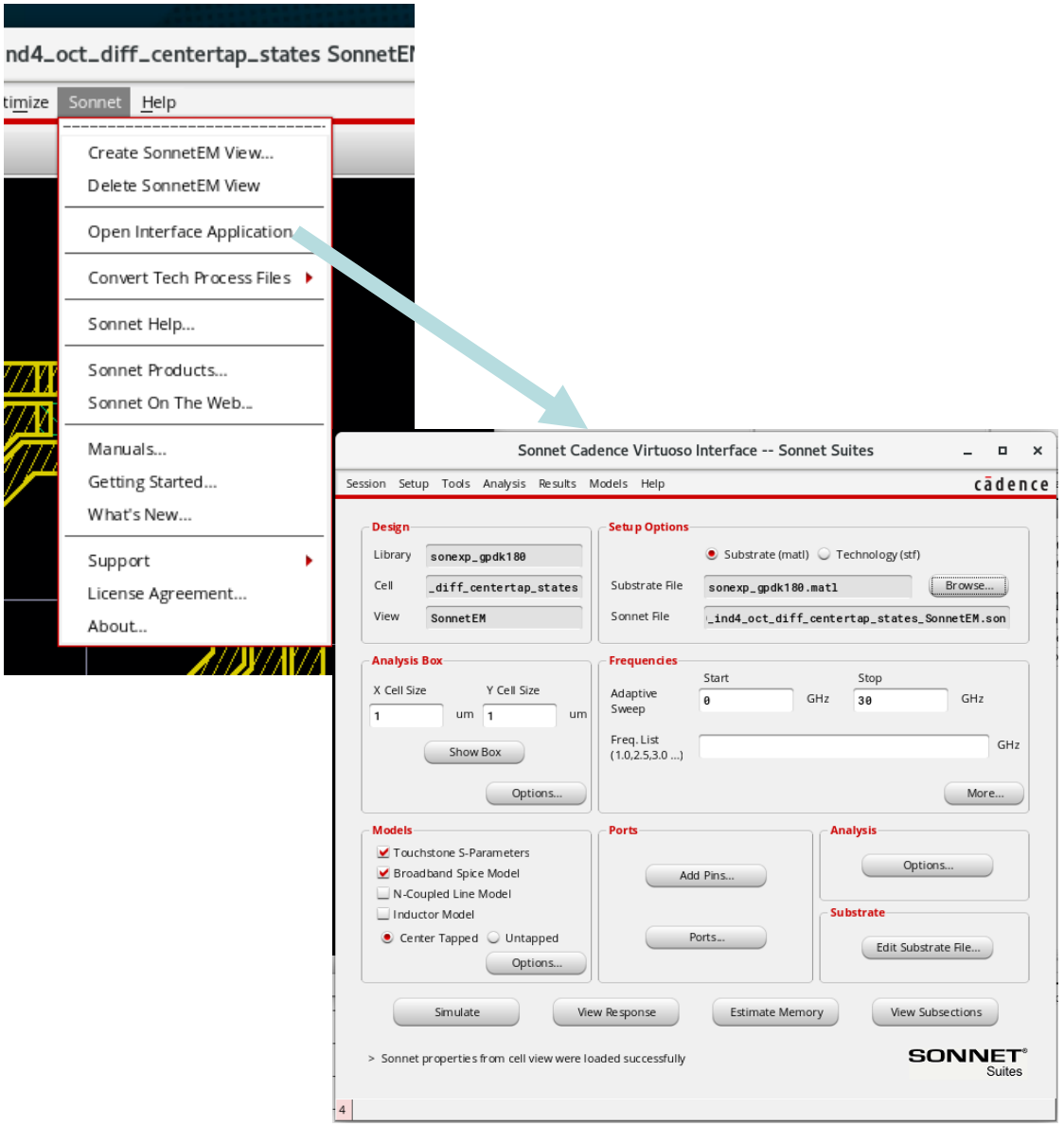
Sonnet EMView



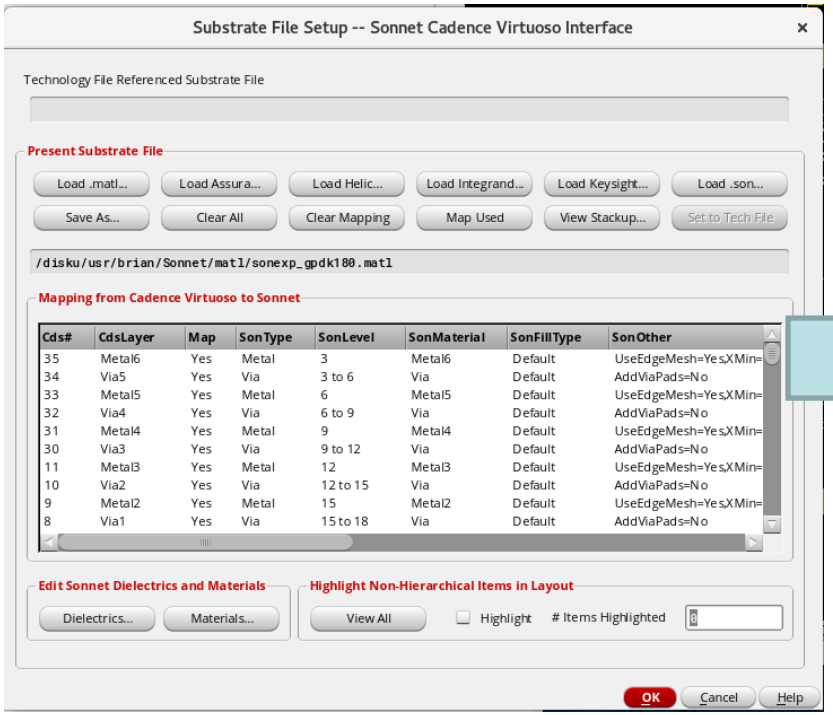
- Sonnet EMViews are generated from, and roughly analogous to Layout Views, however they keep the em-simulation settings.

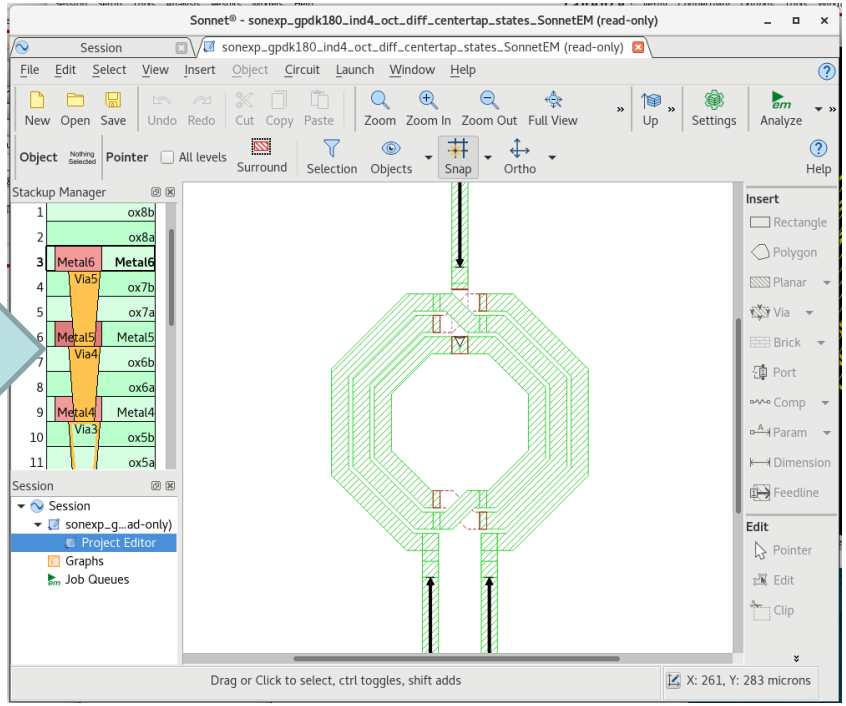
Sonnet Virtuoso Interface Application

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



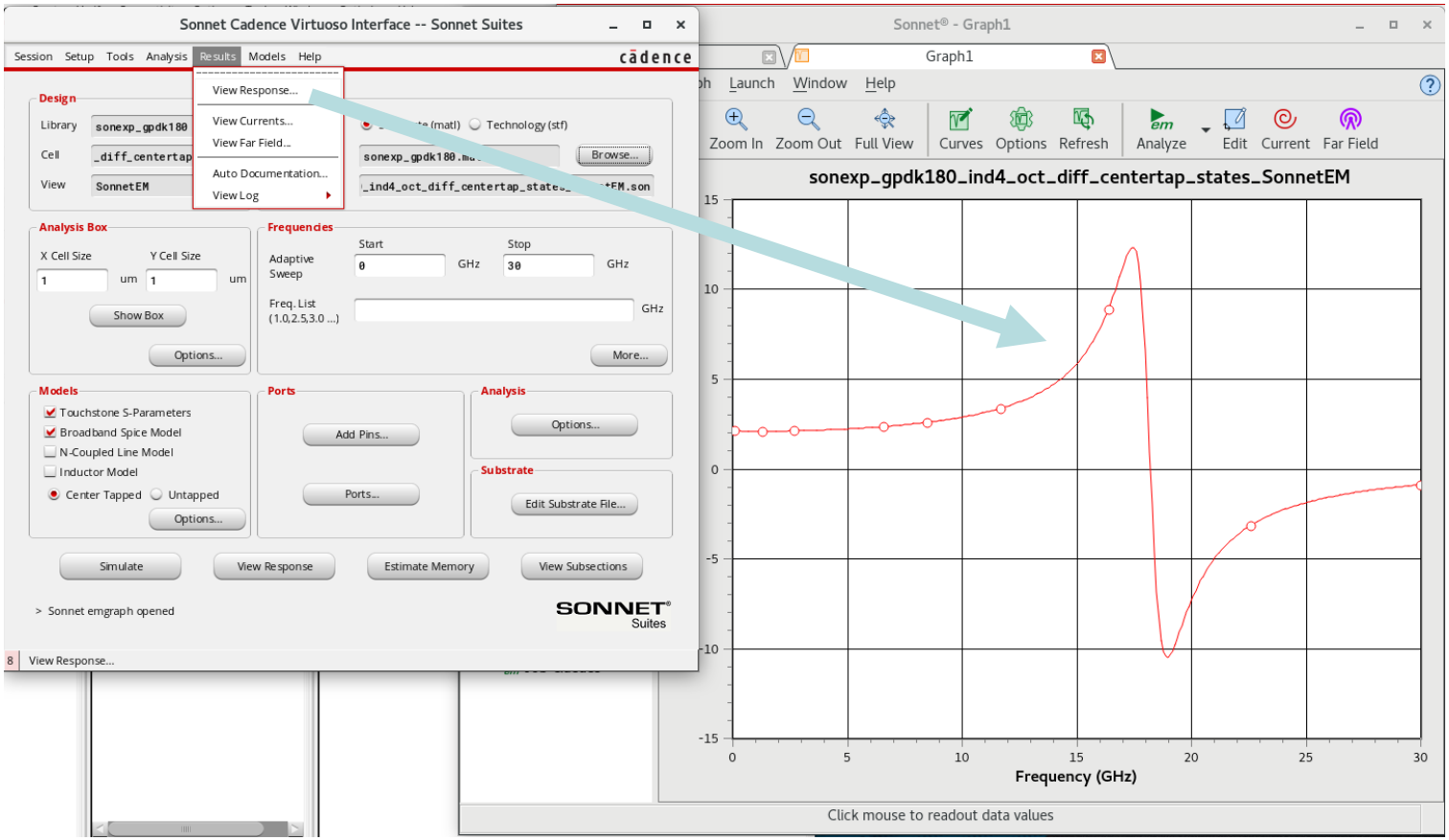
Loading Semiconductor Stackups





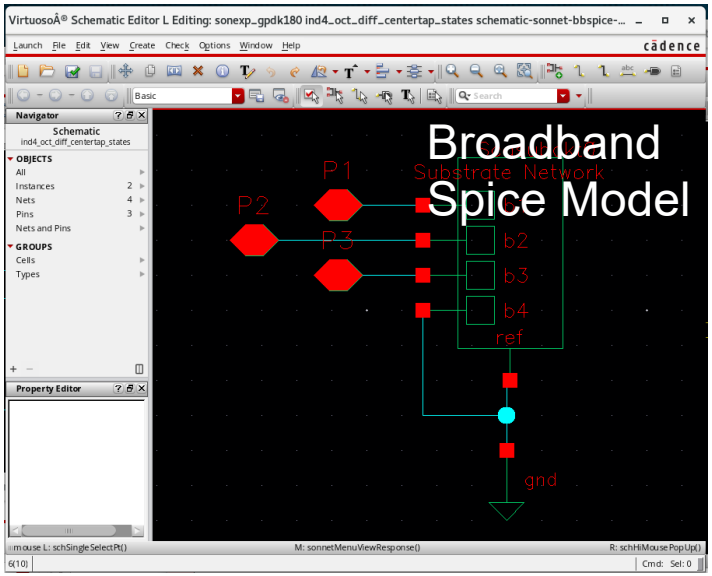
- For supported processes, .MATL and/or .STF files are available to simplify getting data relevant to electromagnetic simulation into Sonnet.

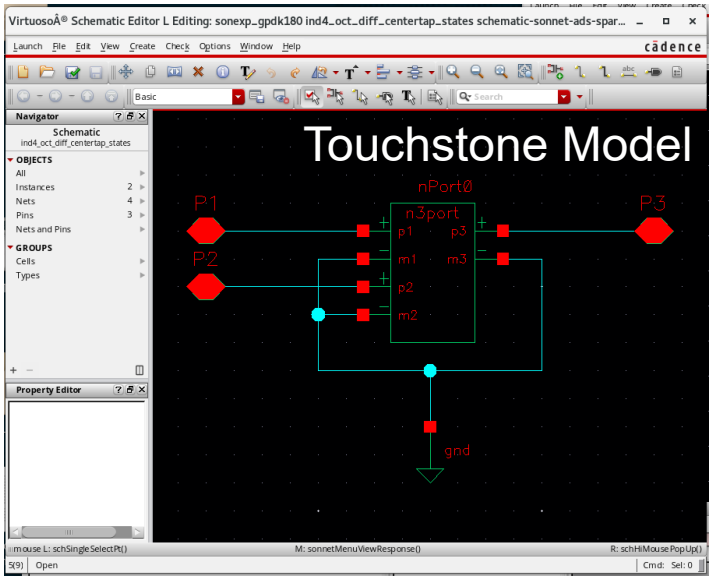
Sonnet Models in Cadence

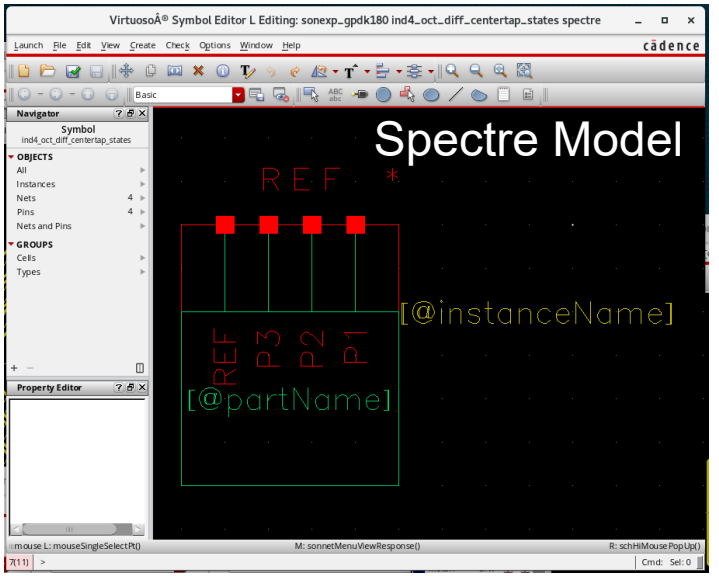


- Simulation Response can be viewed in Sonnet…

Sonnet Models in Cadence



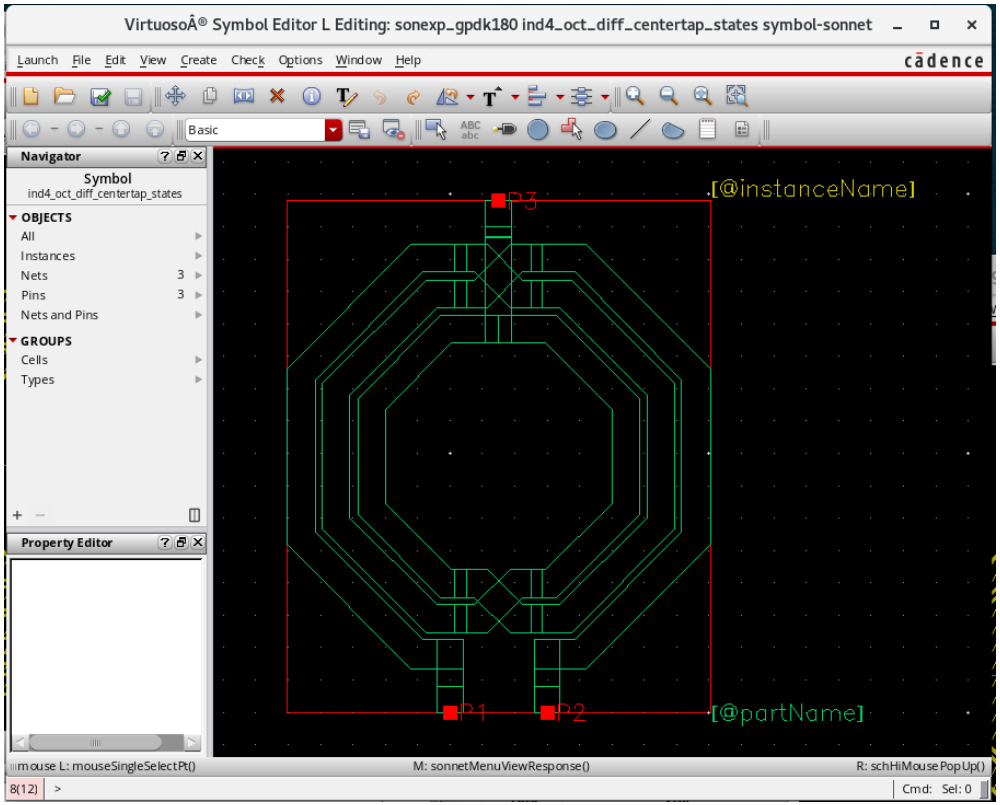


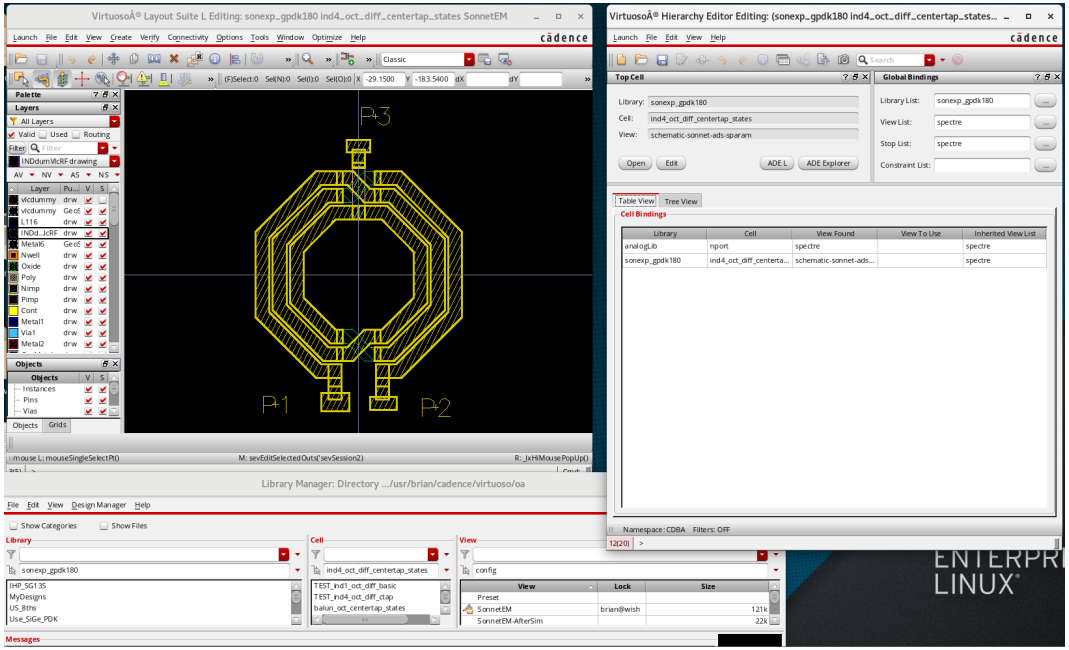


- Or models can be automatically pulled into Cadence.
- (N-Coupled-Line and Inductor Model not shown)

Layout Look-Alike Symbols

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

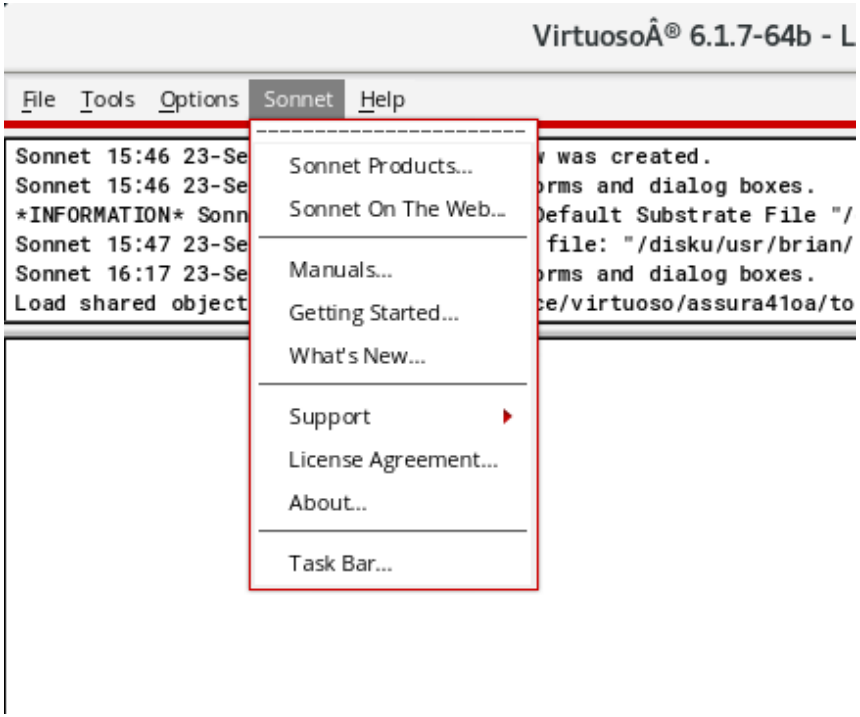




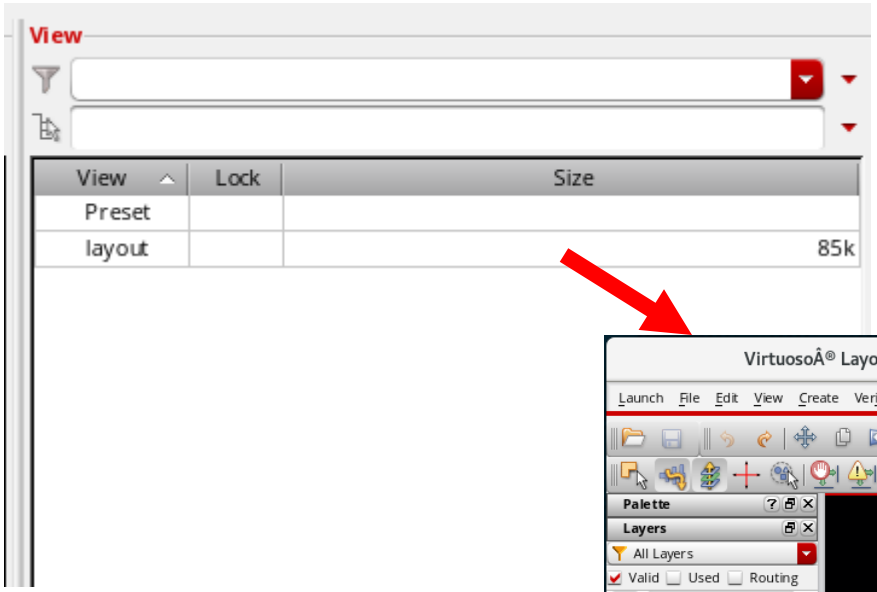
Demo of Cadence Interface

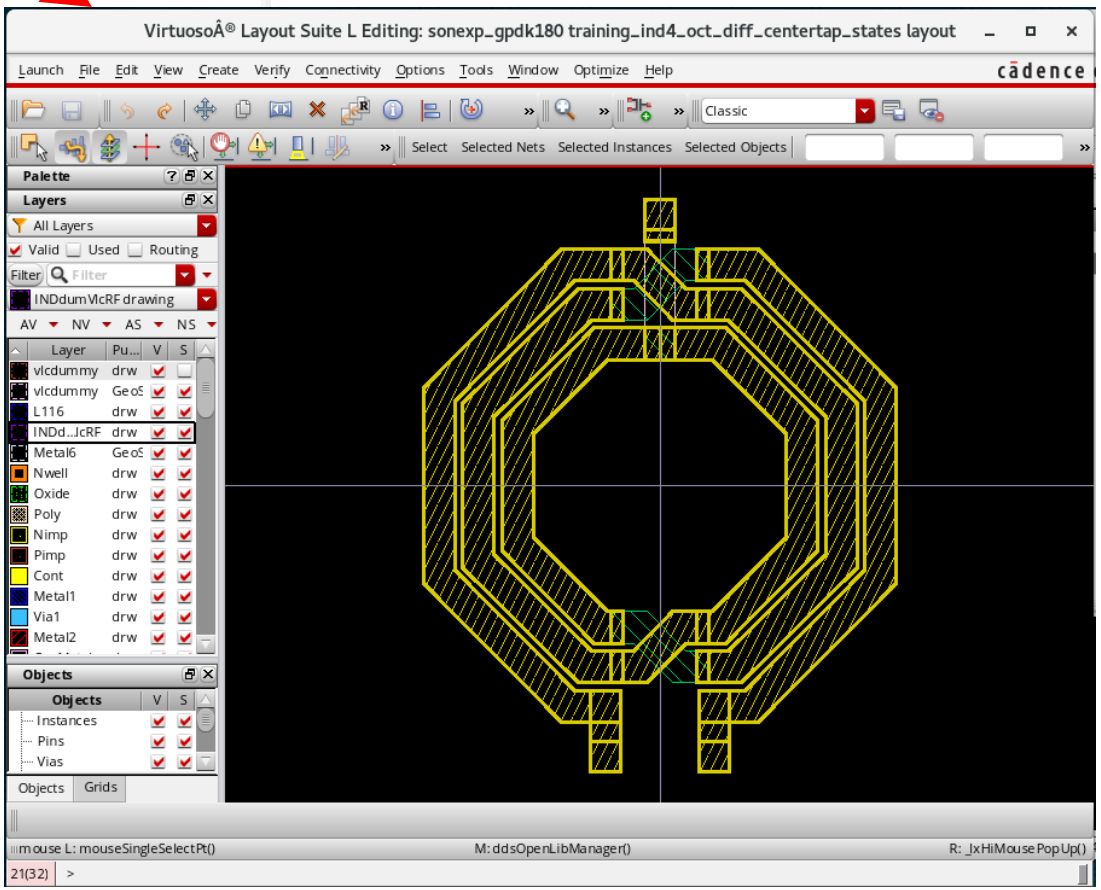
Interface Install

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

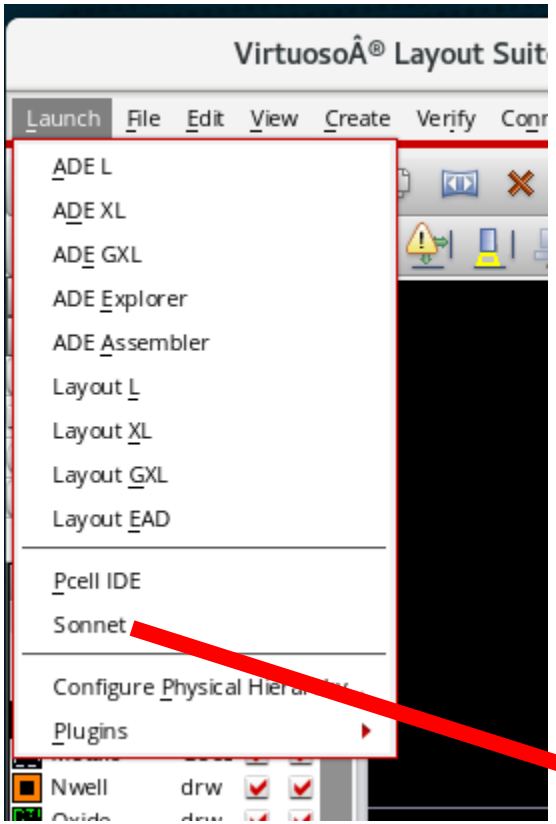


Open the Sample Layout from the Library

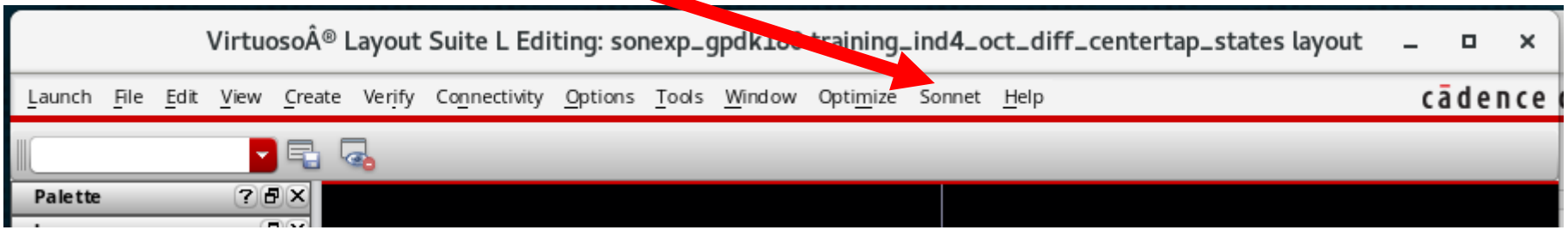




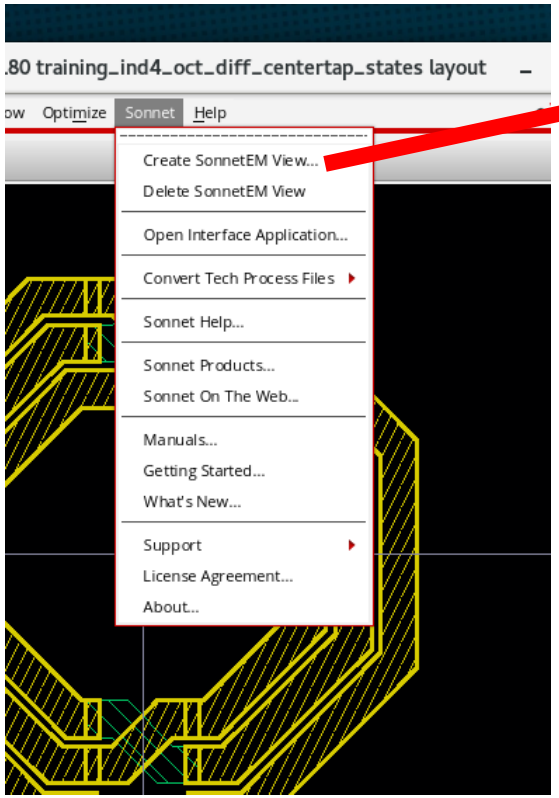
Launch Sonnet Interface



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

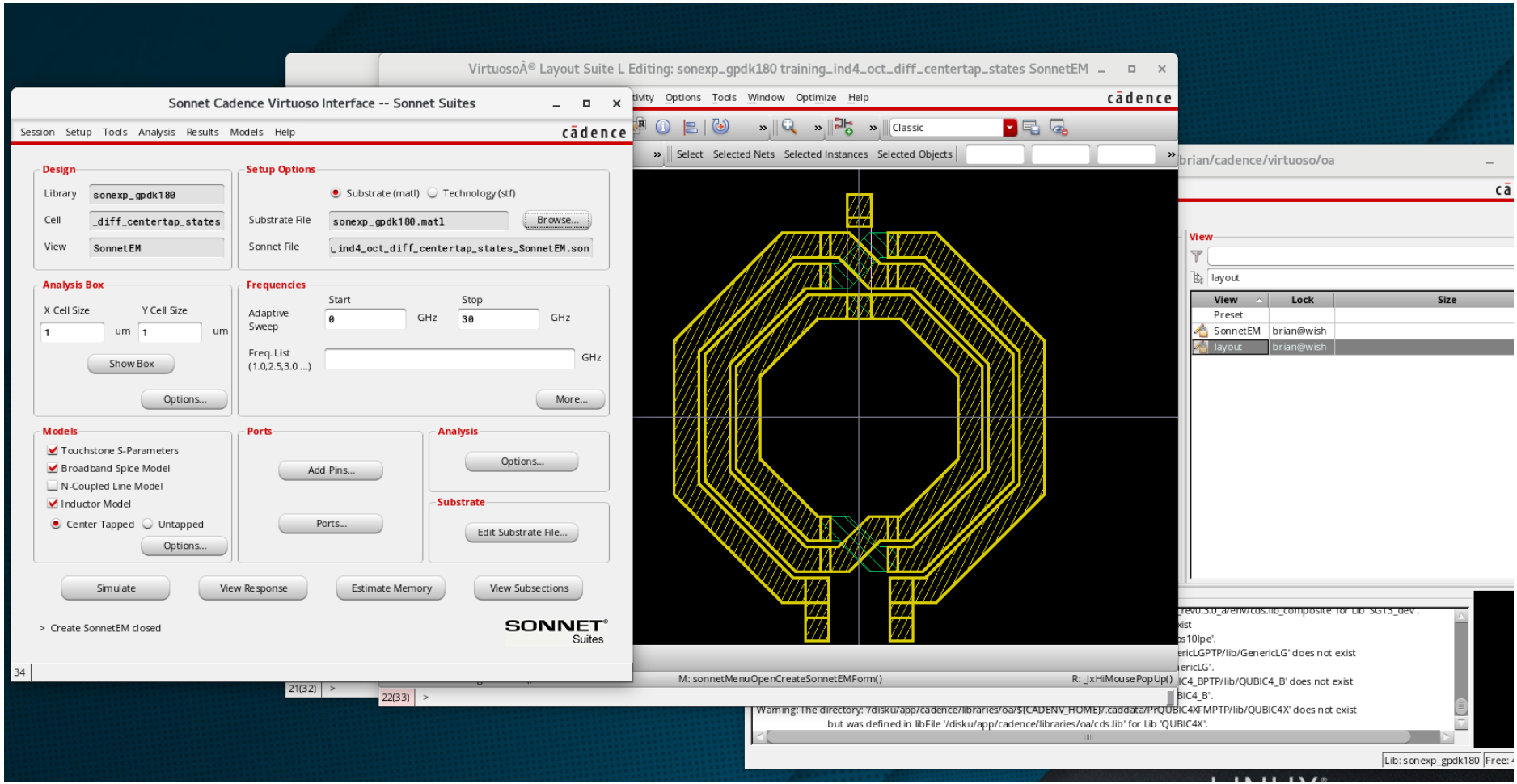


Create EMView



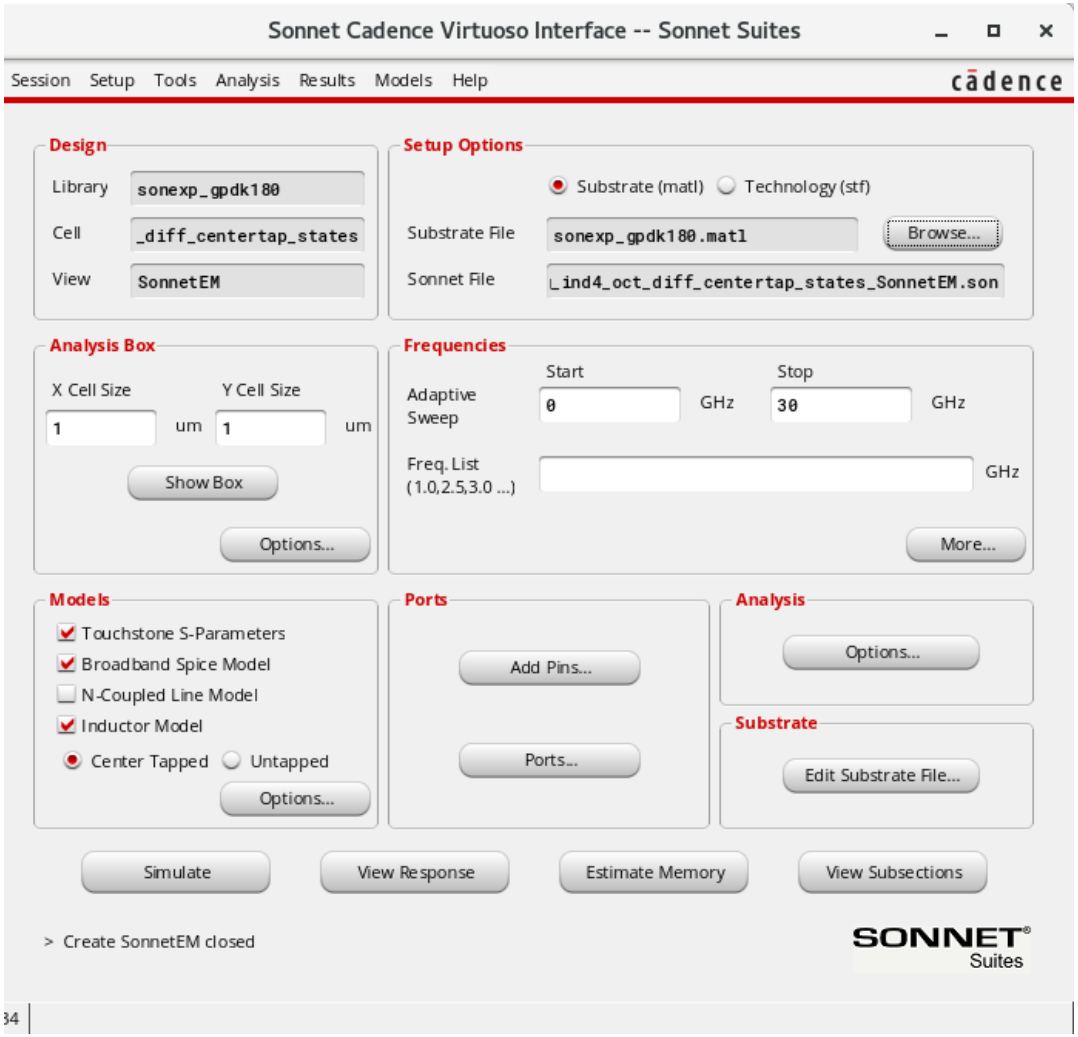
- Launch the wizard to create and emview

Created EMView



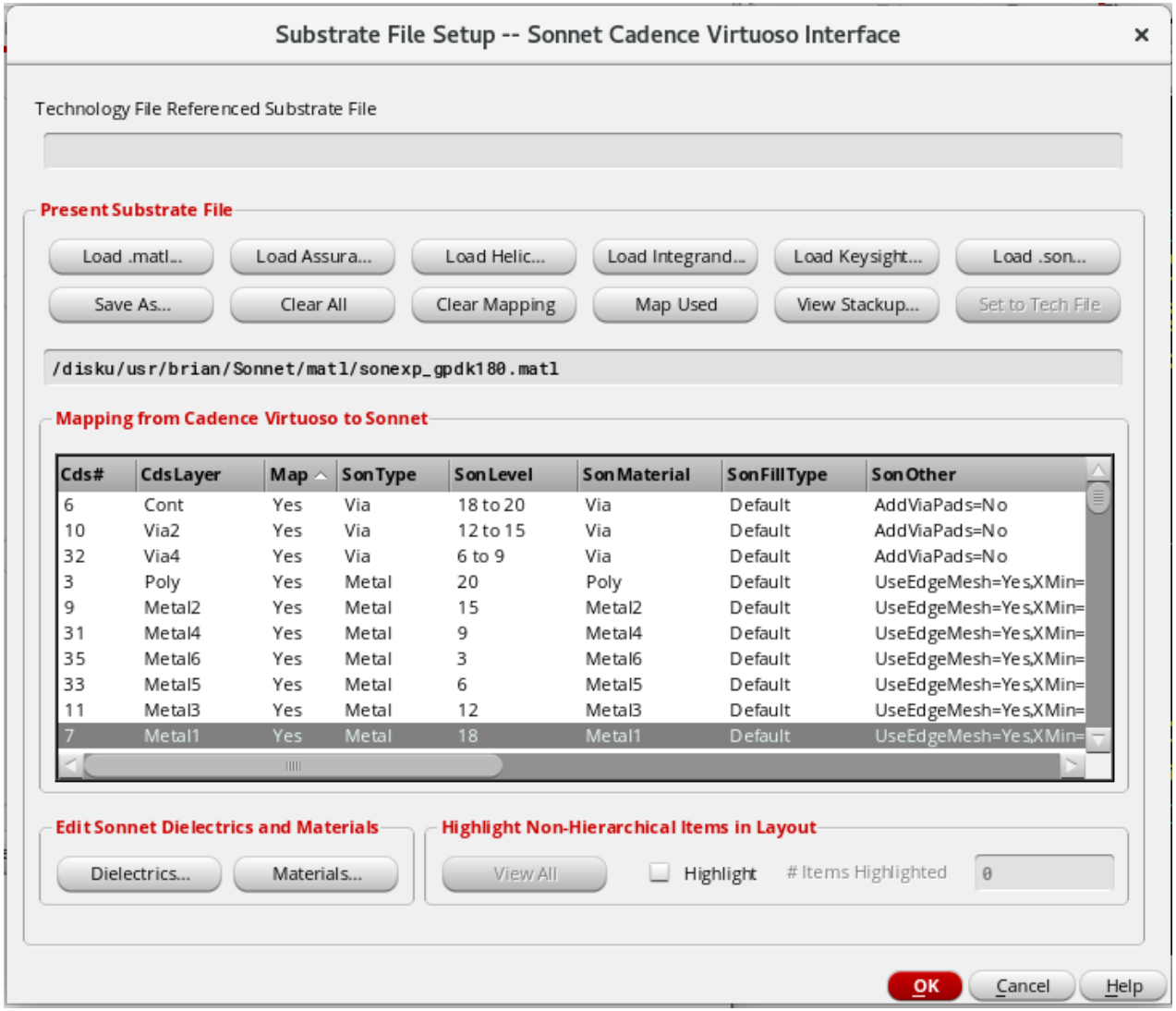
Interface Application

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

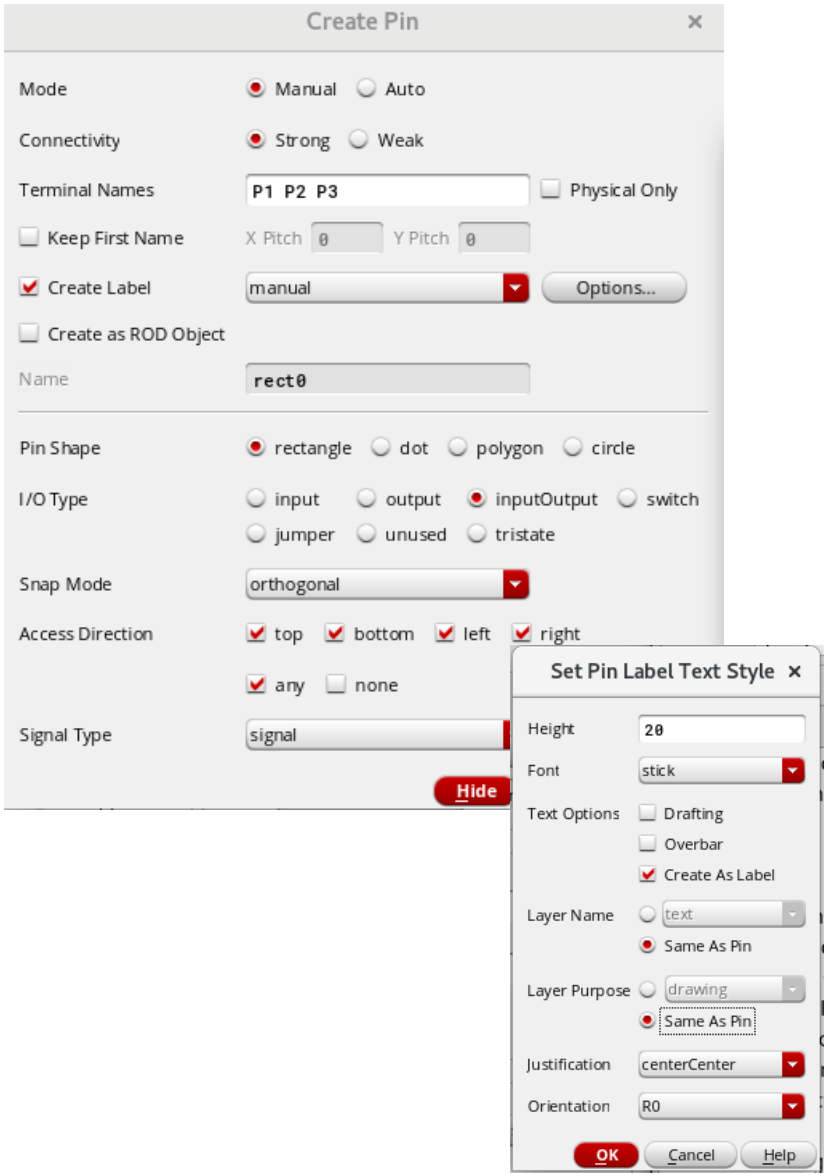


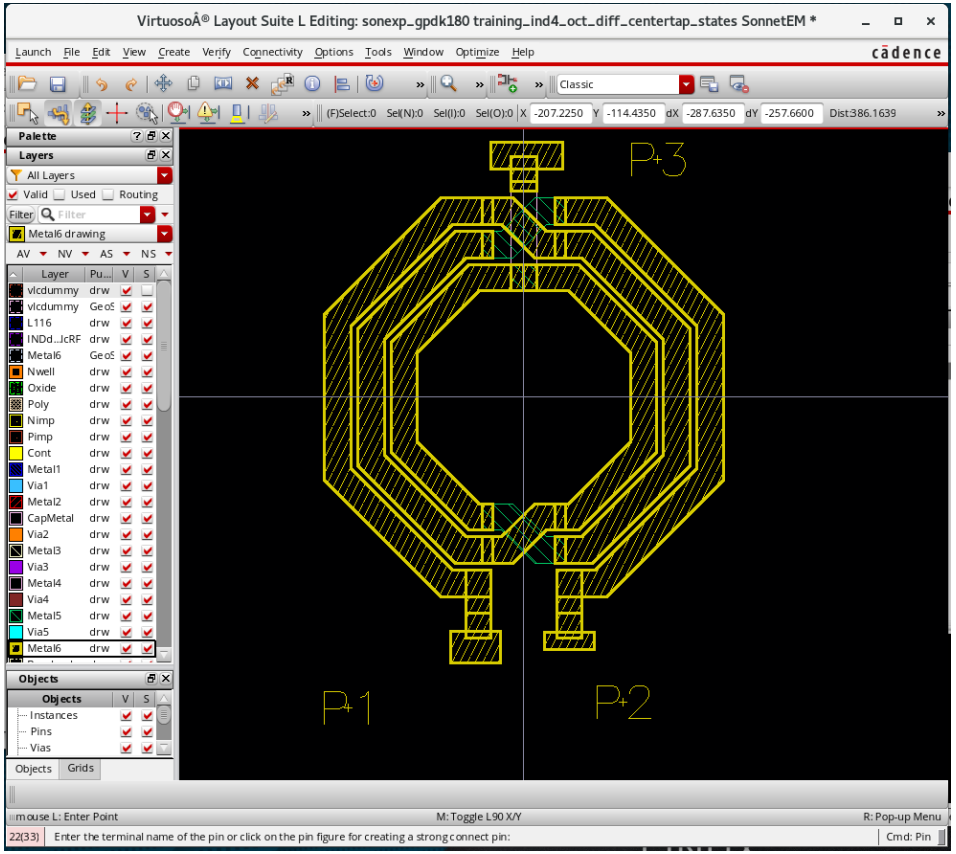
Substrate File

- GPDK180 is a generic PDK useful for examples
- It is loaded and the layers are mapped



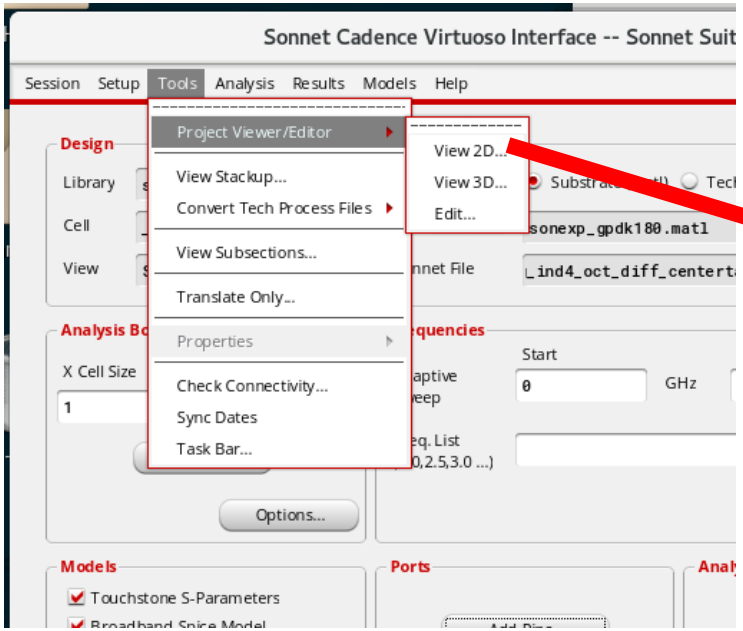
Add Pins

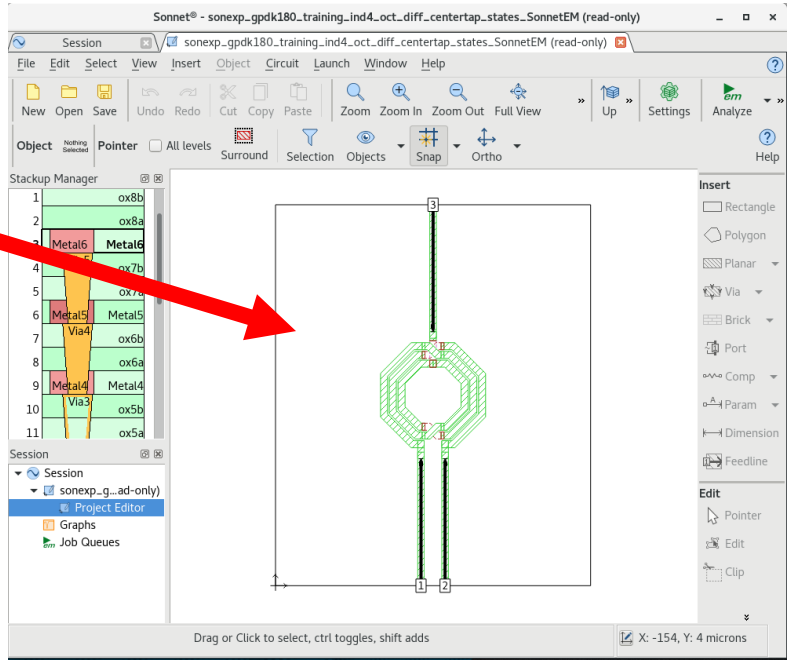


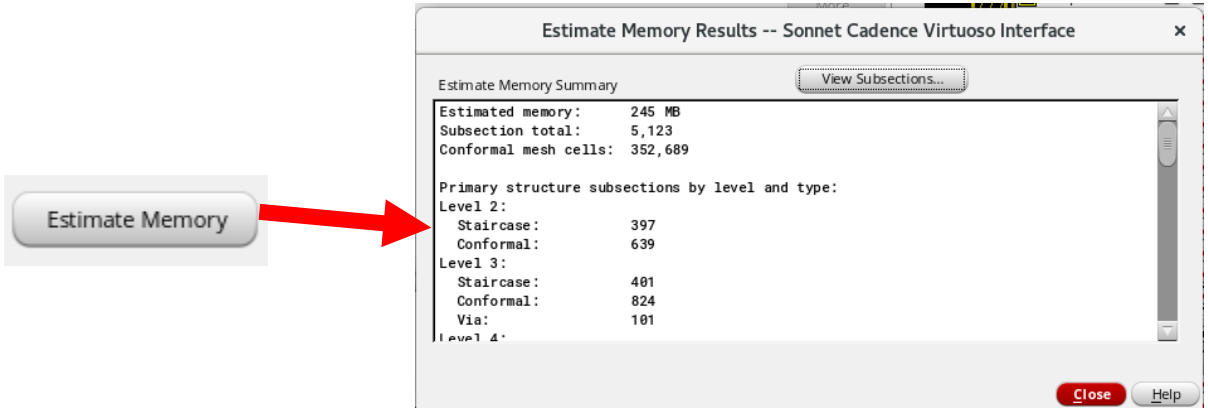


- After selecting options and metal level, click and drag in the layout editor.

Check the Layout in Sonnet

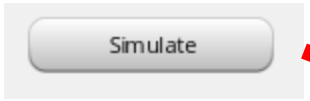


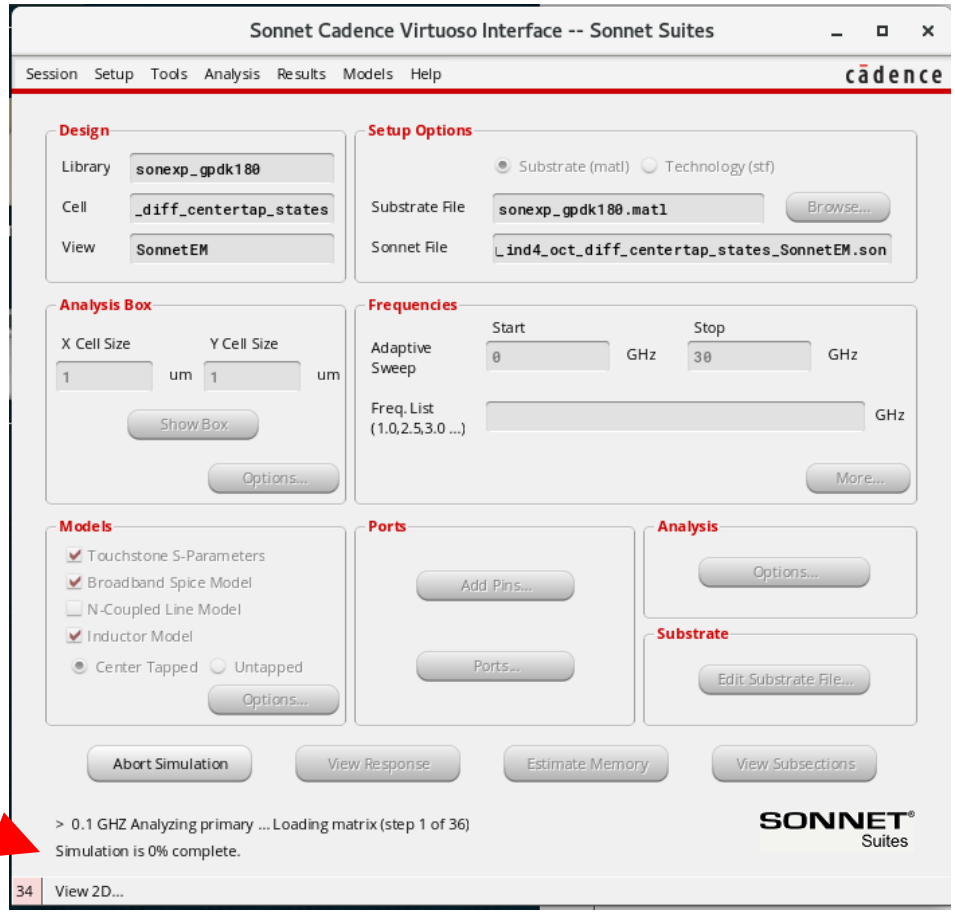




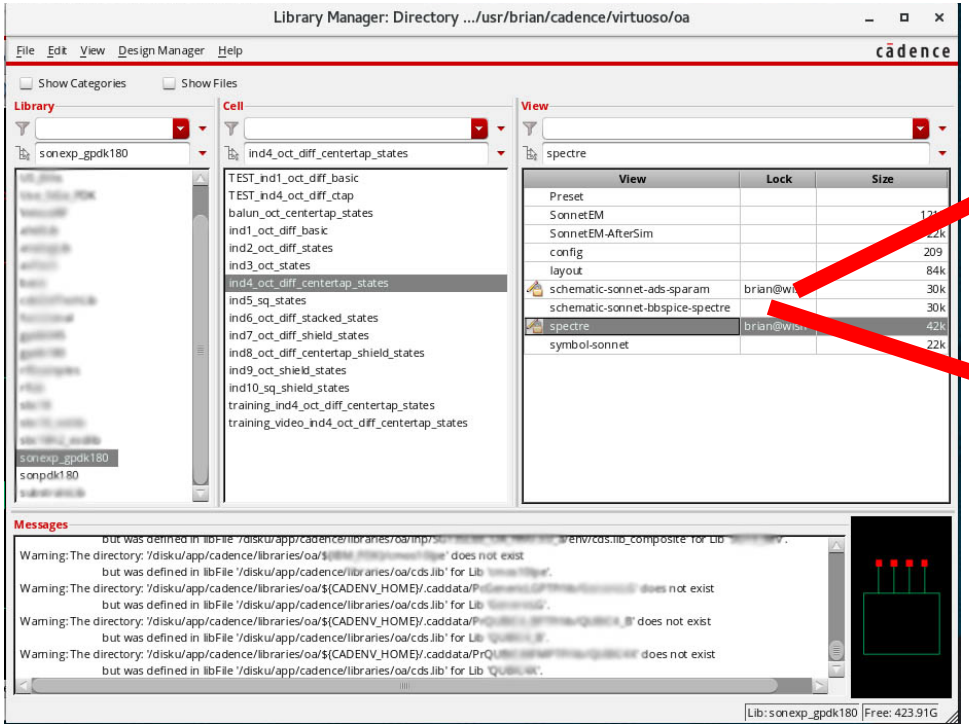
Simulate

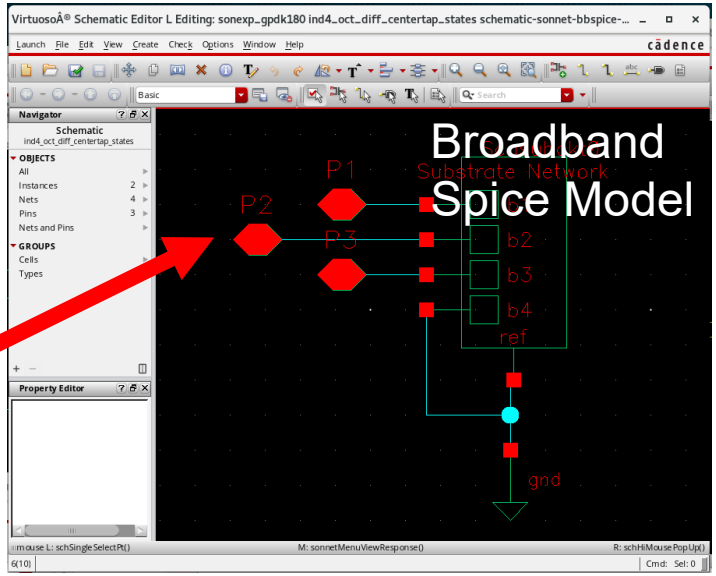
- Hit simulate and it will call and run Sonnet in the background.
- The window can be closed and the simulation will continue.

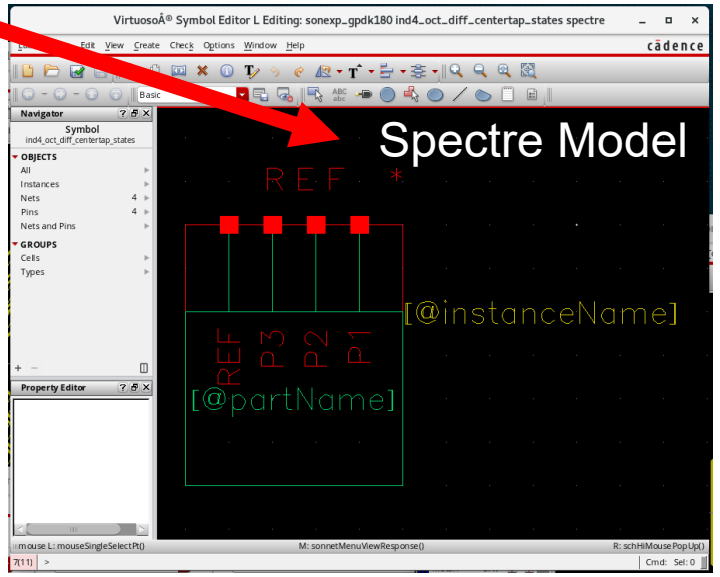




View Models







Conclusions

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