

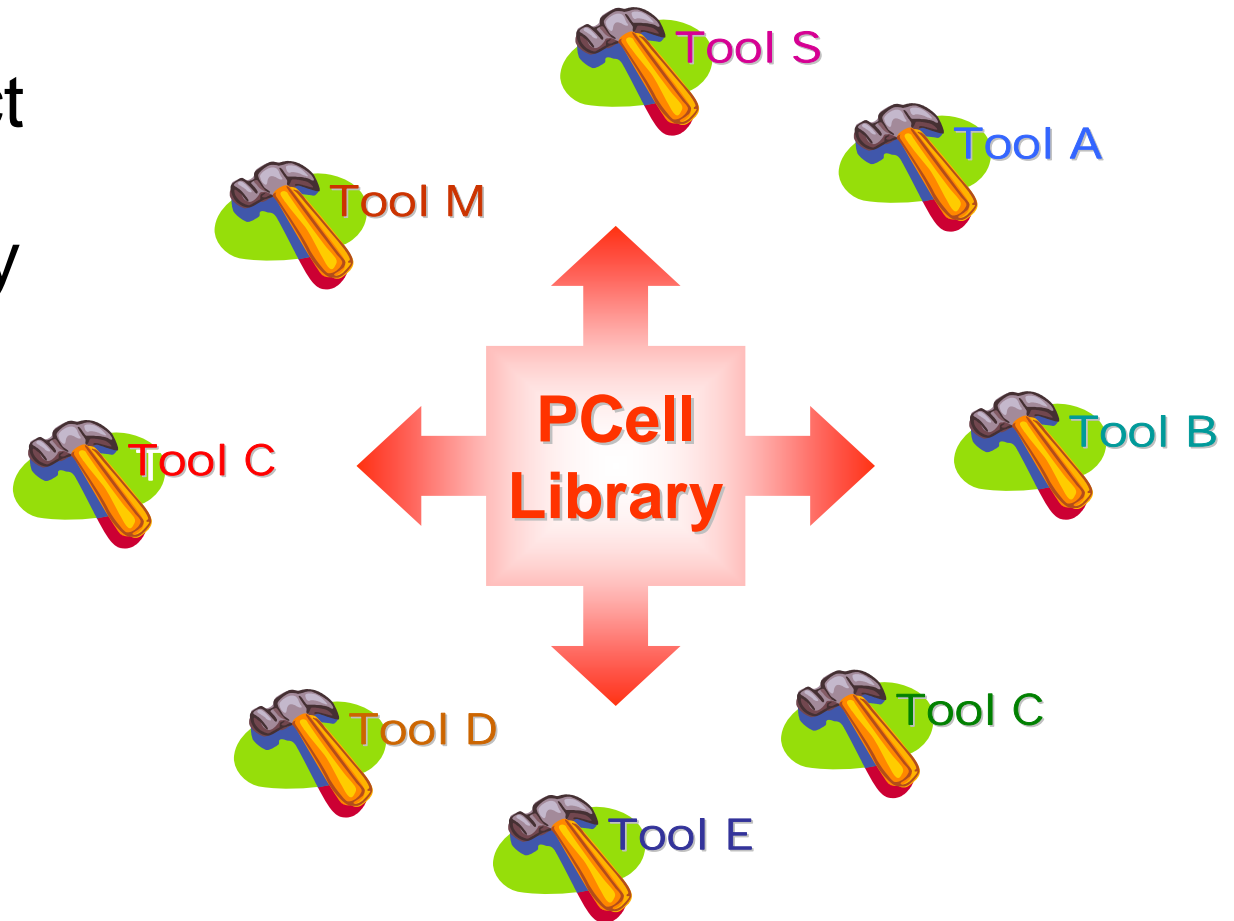
Project Introduction

Leveraging the Foundation of OpenAccess

Michael Ma, VP of Business Development

Agenda

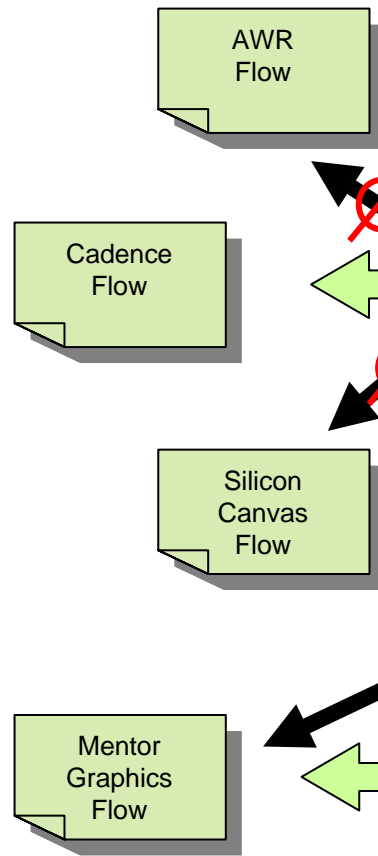
- ⊕ The Concept
- ⊕ The Project
- ⊕ The Library



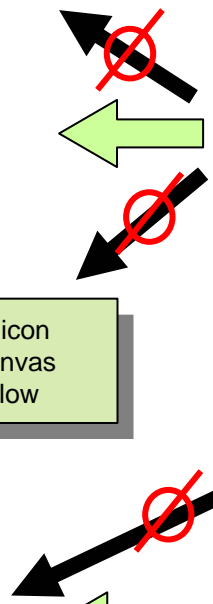
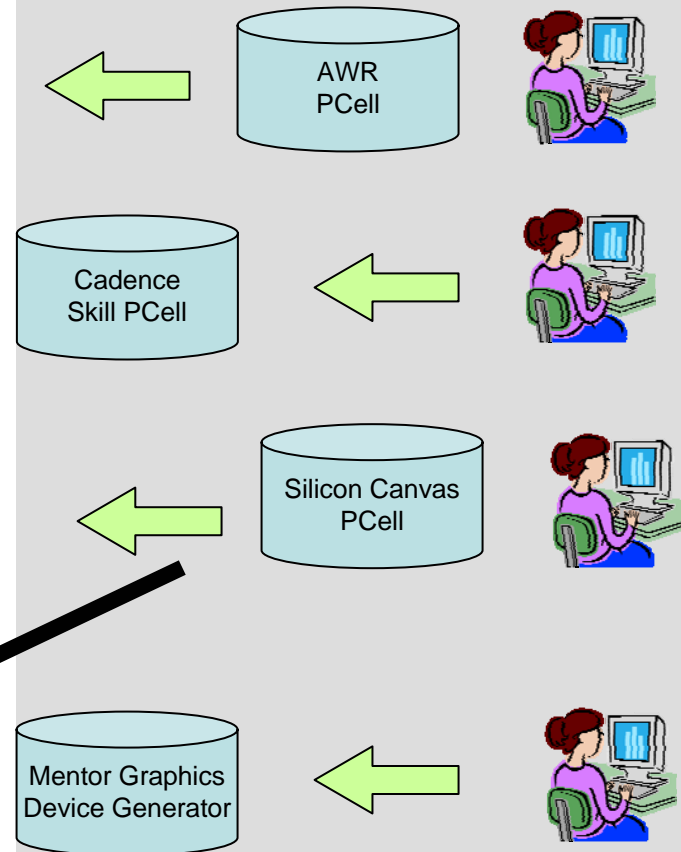
Custom Design Kit Support

Foundry View

Customer Requests

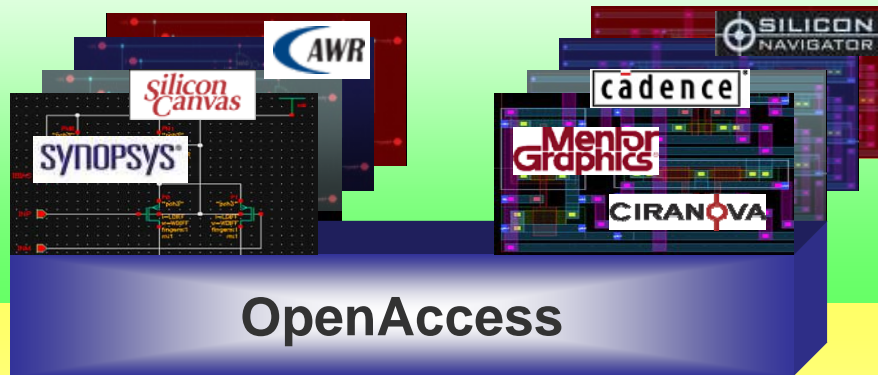


Proprietary device generators supporting similar features.....

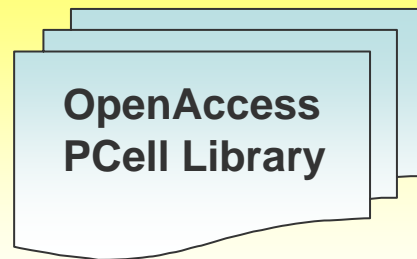


Leveraging the Foundation of OpenAccess

Analog design tools from all EDA vendors



COMPETE



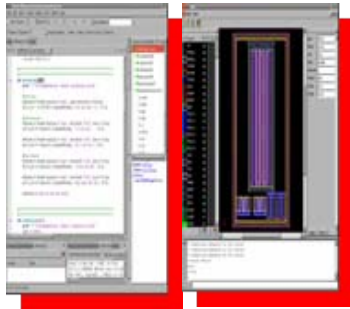
STANDARDIZE

EDA Interoperable PCell Library (IPL) Project

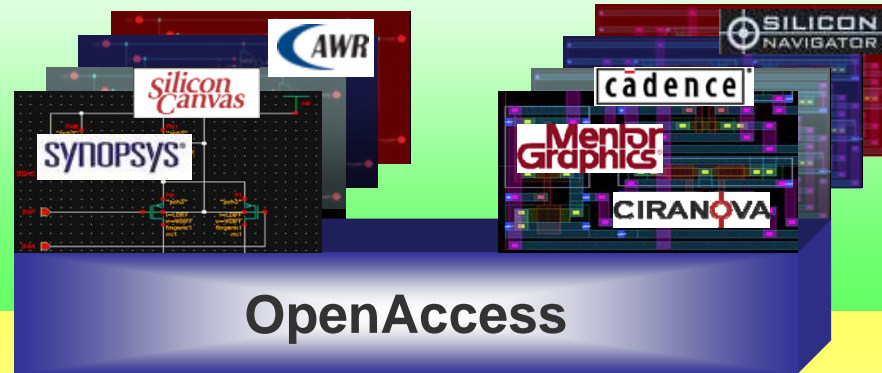
- ❖ A group of EDA companies met in 9/06 and committed to this IPL project with the following agreement:
 - Synchronize on OpenAccess versions
 - Promote OpenAccess PCell interoperability
 - Create high quality libraries that are validated across many OpenAccess-based tools from multiple vendors
- ❖ Members:
 - AWR, Ciranova, Silicon Canvas, Silicon Navigator, Synopsys
- ❖ Supporter:
 - Mentor Calibre – supporting the validation process

Completing the Infrastructure

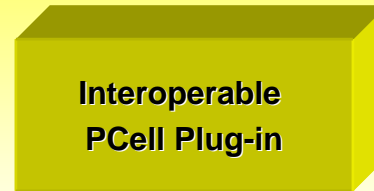
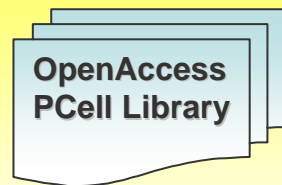
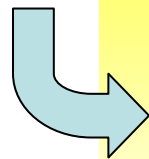
Interoperable
PCell Development



Analog design tools from all EDA vendors



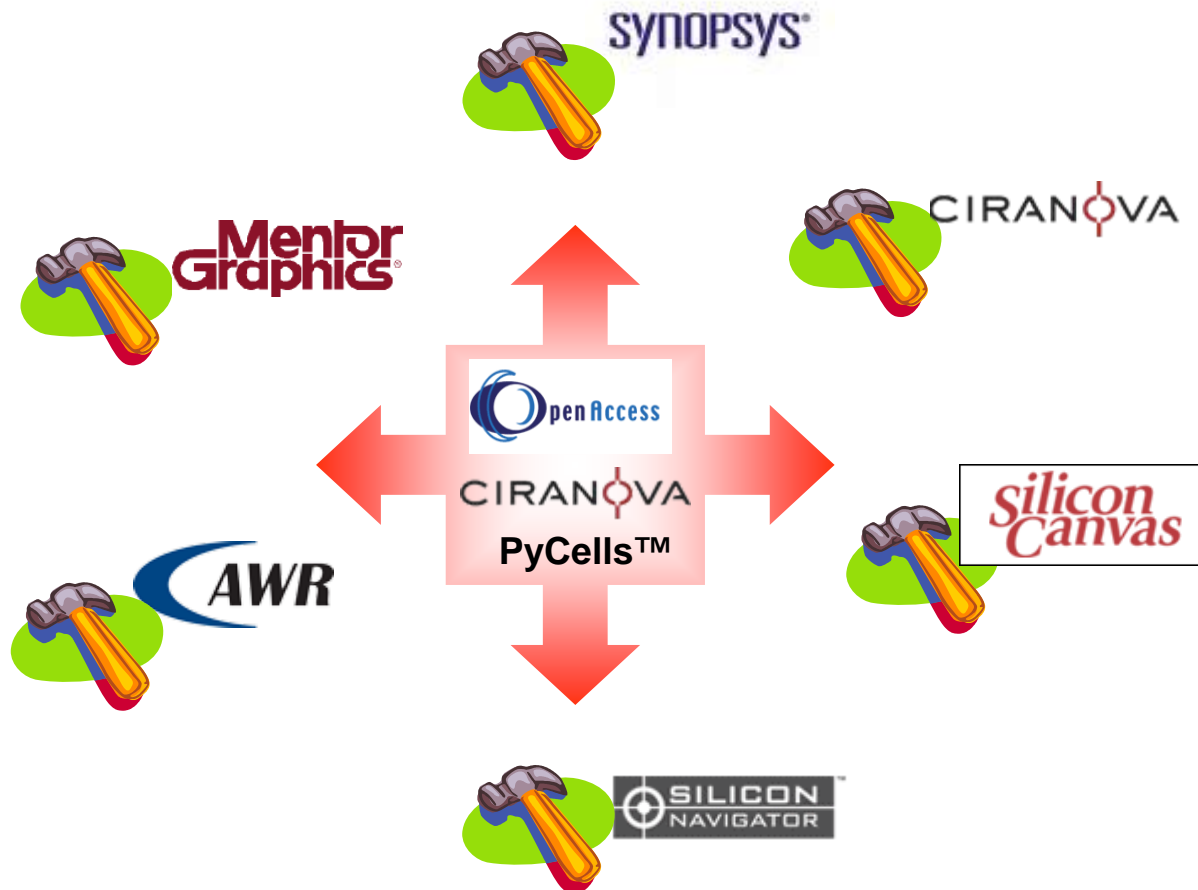
COMPETE



STANDARDIZE

- ϕ Using the OpenAccess PCell plug-in mechanism
- ϕ Using non-proprietary programming language
- ϕ Using freely available layout generation framework

A Library is Available Now for Interoperability Testing



The Library

Objective:

- Offer as test vehicle to validate interoperability across all OpenAccess-based EDA tools
- Available for download now
 - Includes PCell source code
 - www.ciranova.com/downloads/IPL_library.php

A high quality open source library

For a generic 0.13um process

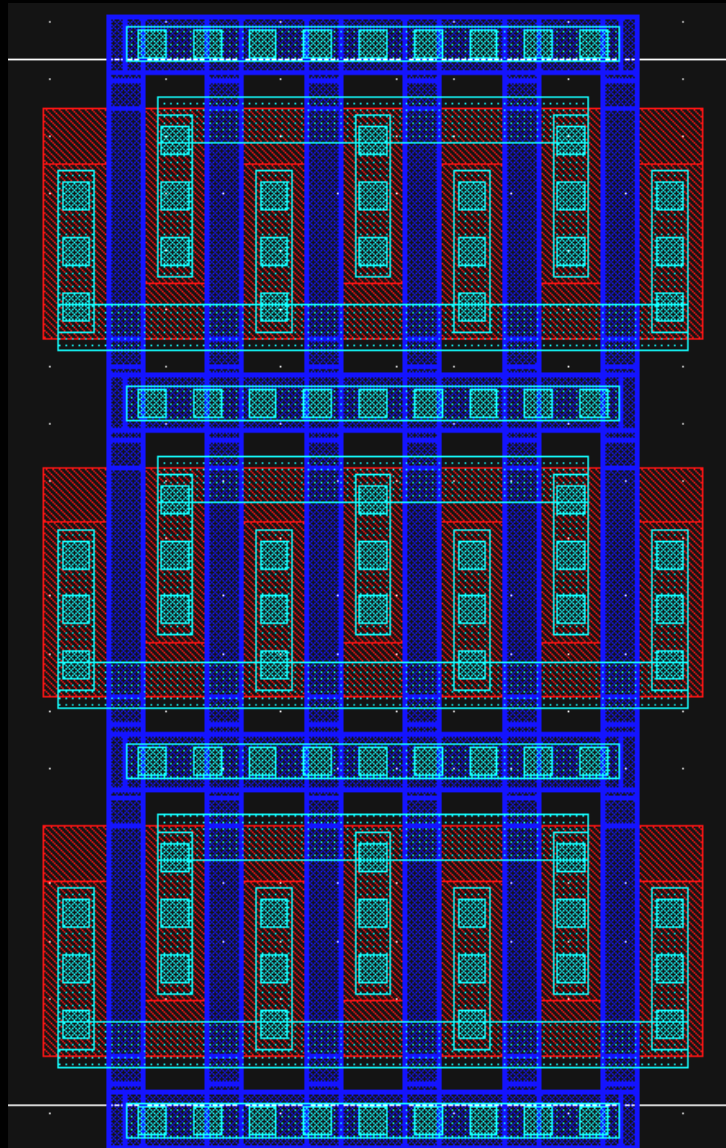
Rich set of PCells

- Row stacking MOS
- Row stacking differential pair
- Single row MOS
- Row stacking resistor
- Row stacking interdigitated resistor pair
- Inductor
- Comb capacitor

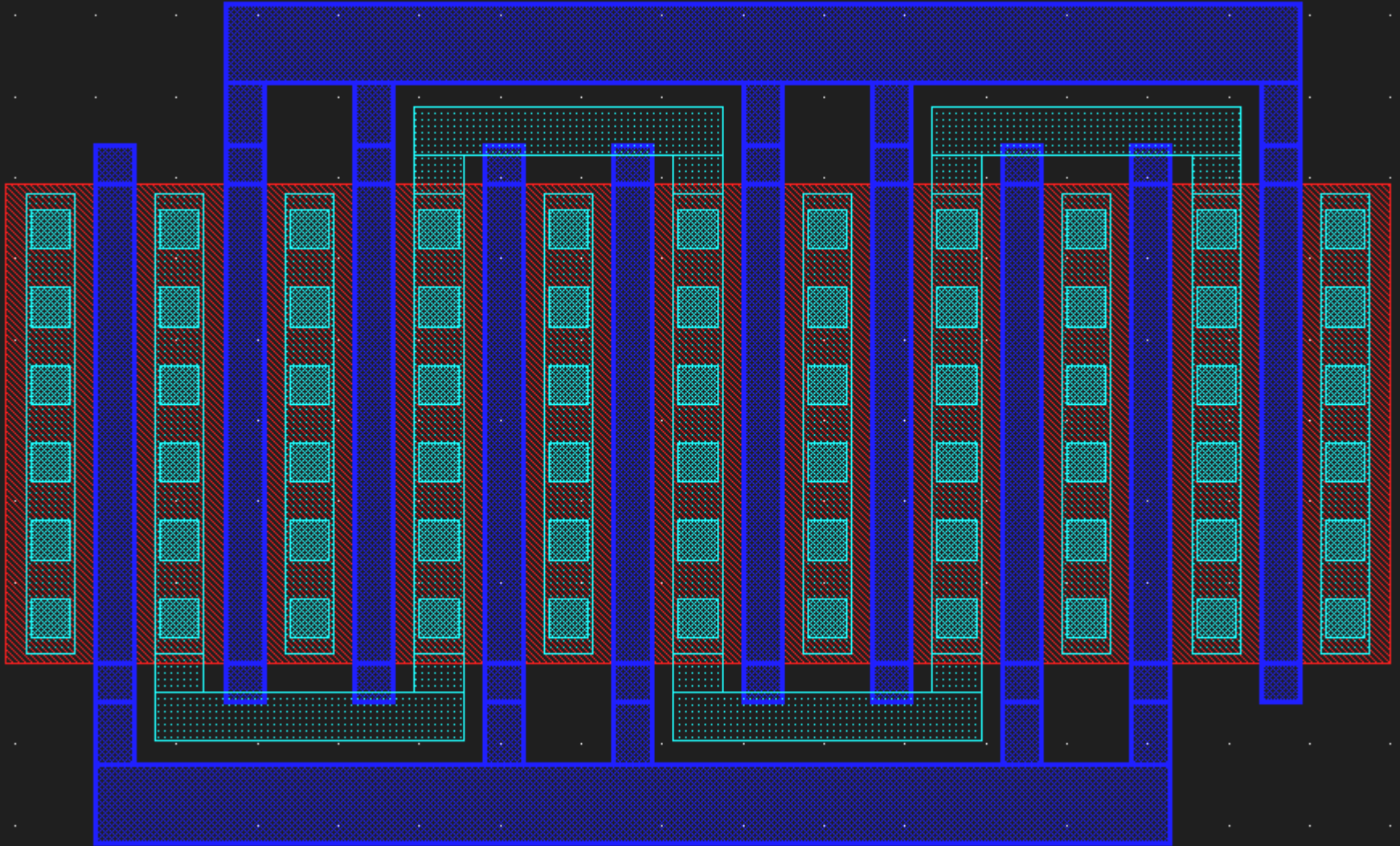


Instantiation (Plug-in) and development environment (PyCell Studio) are available for FREE

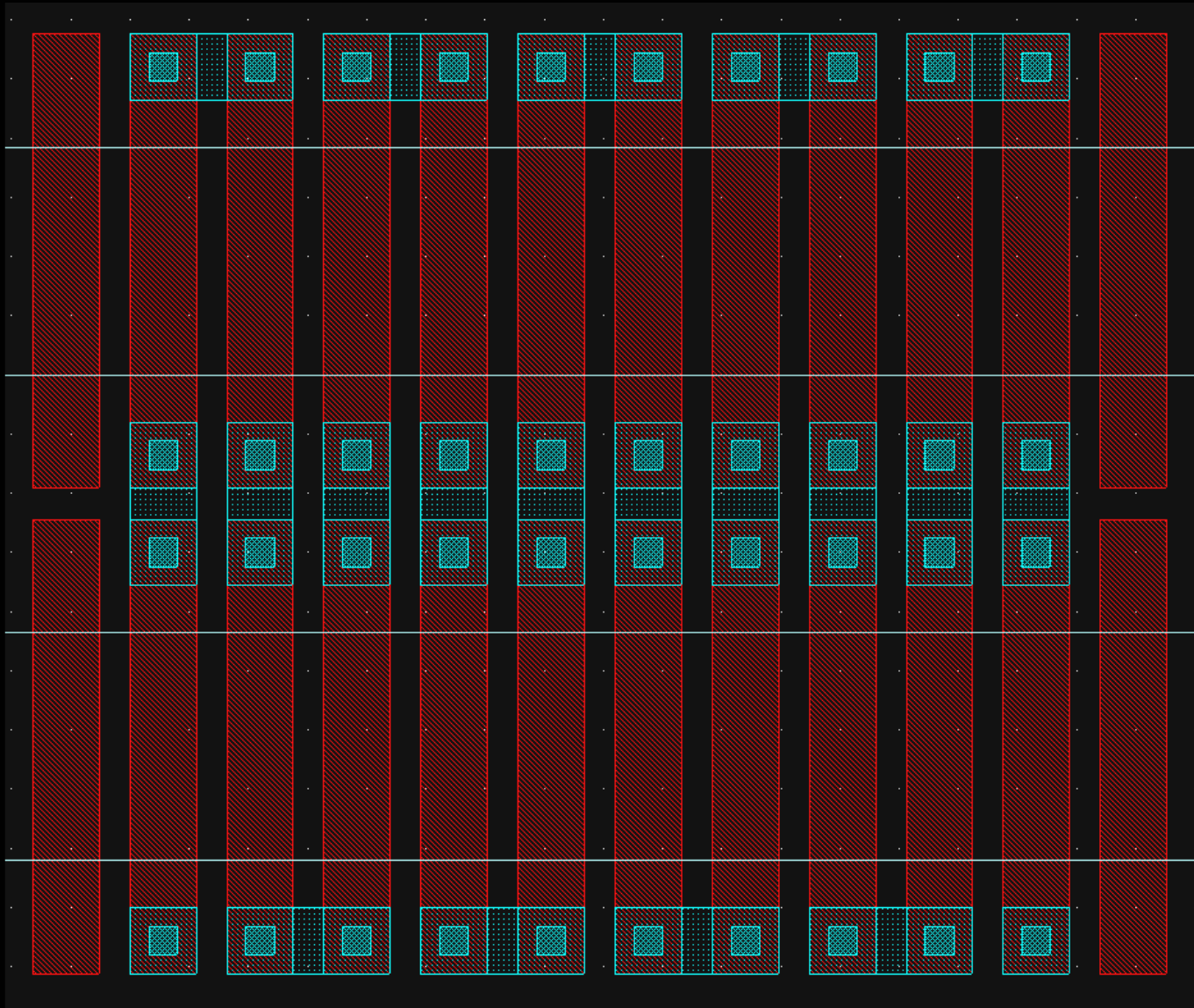
IPL Library: Transistor



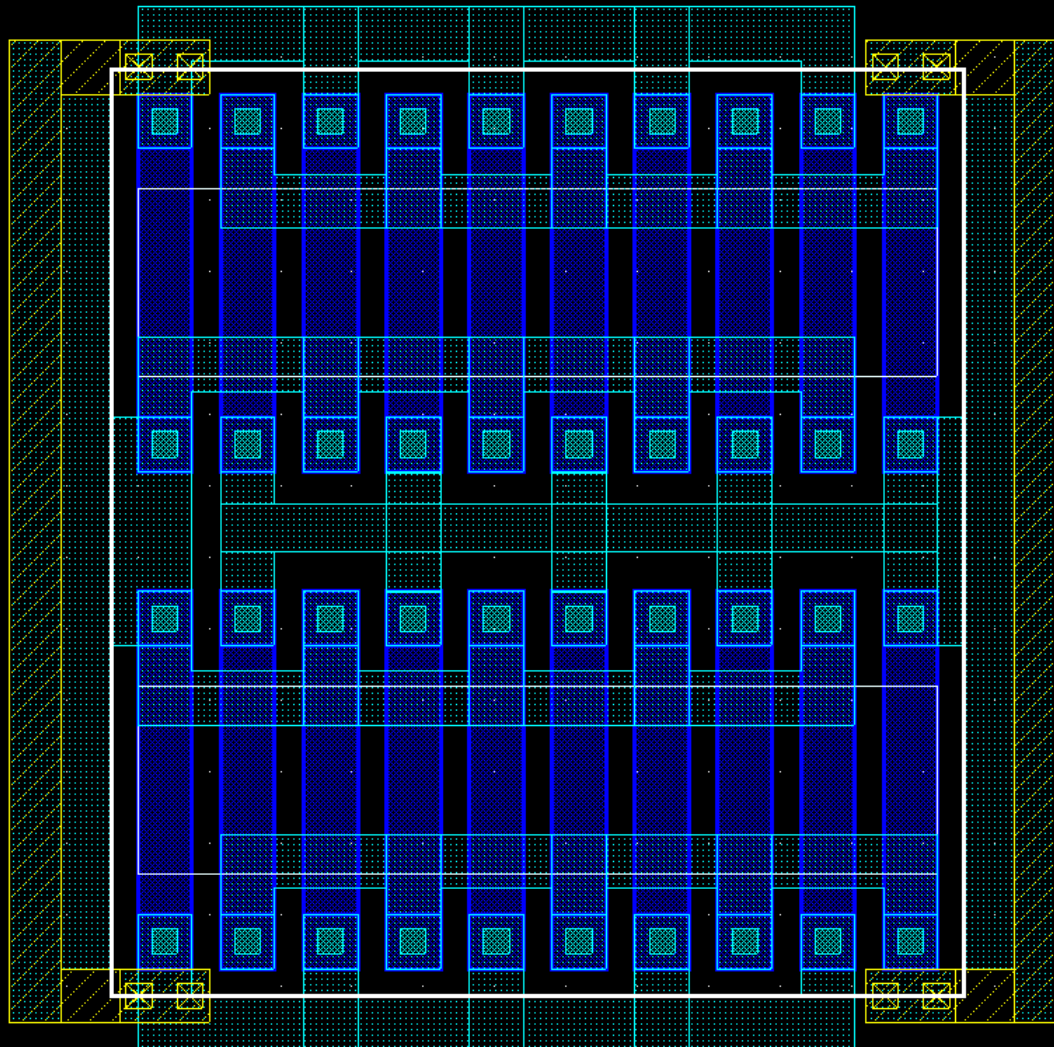
IPL Library: Differential Pair



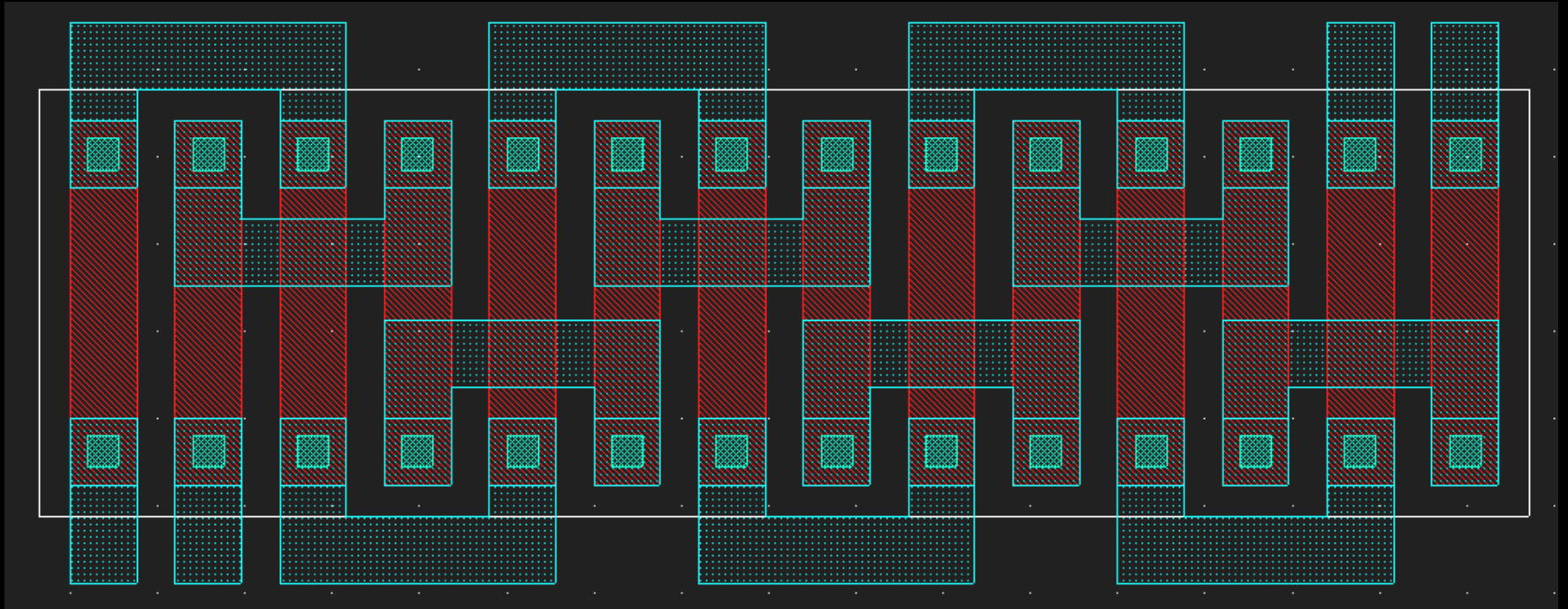
IPL Library: Resistor



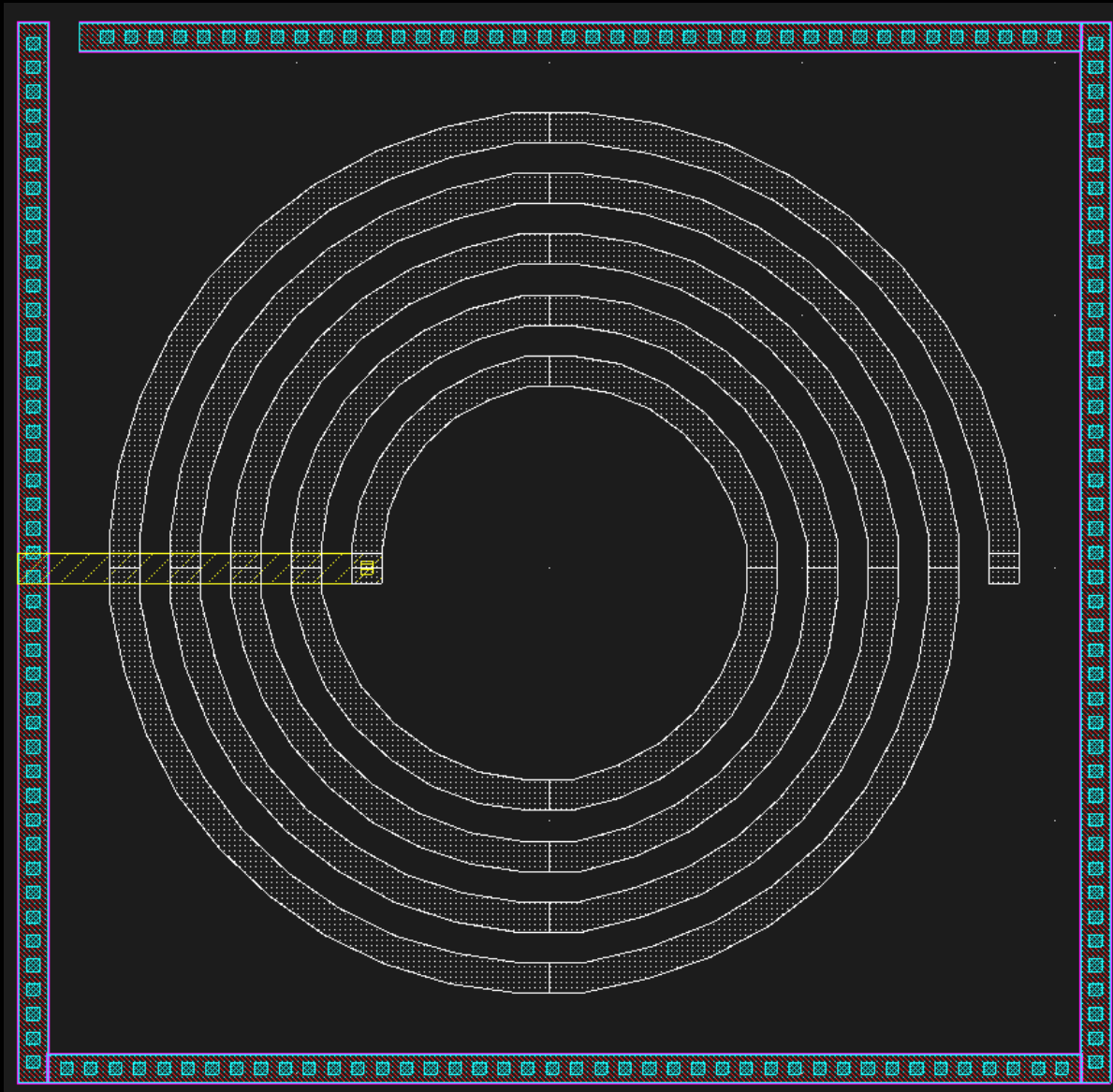
IPL Library: Parallel Resistor Pair



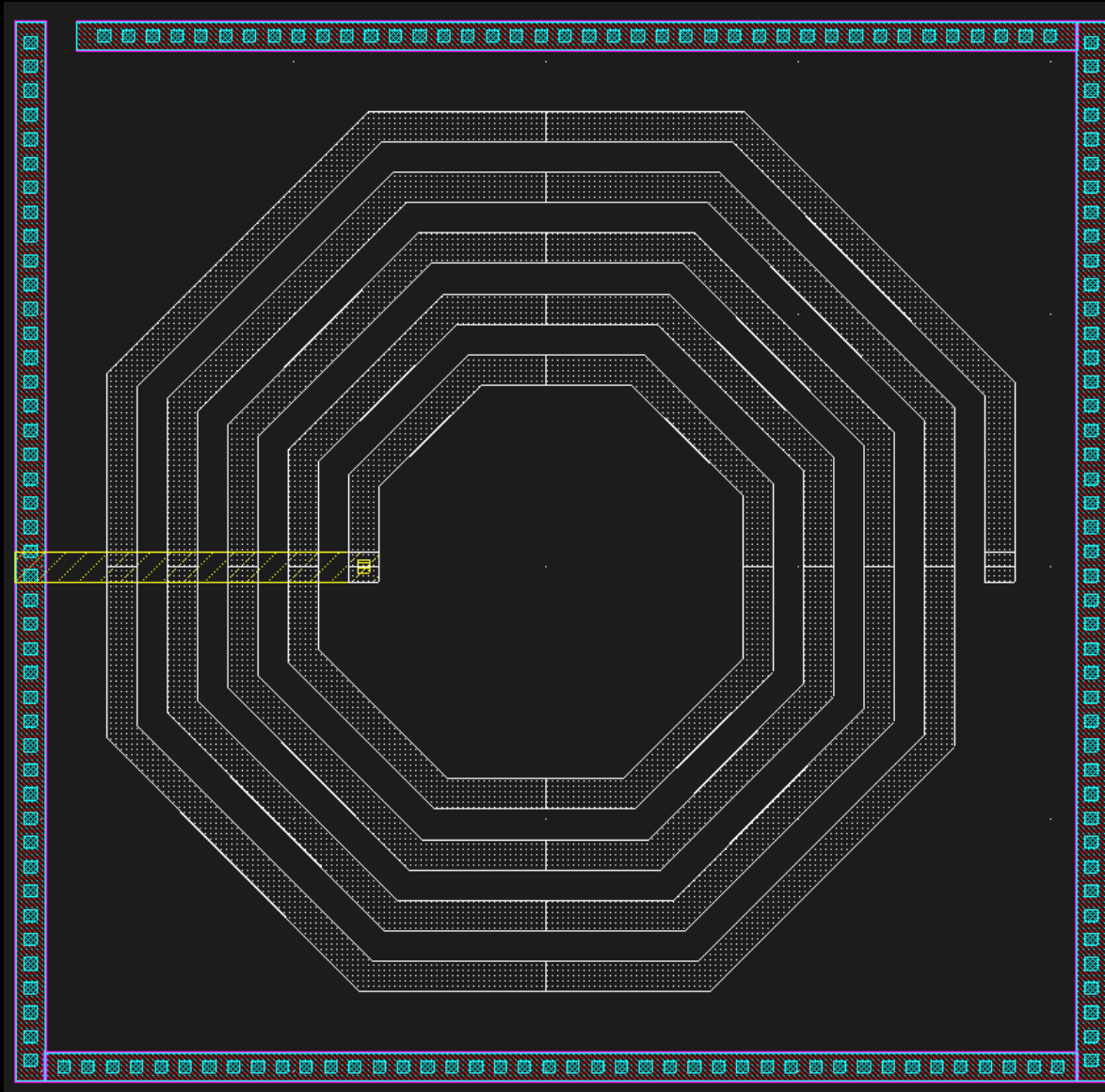
IPL Library: Series Resistor Pair



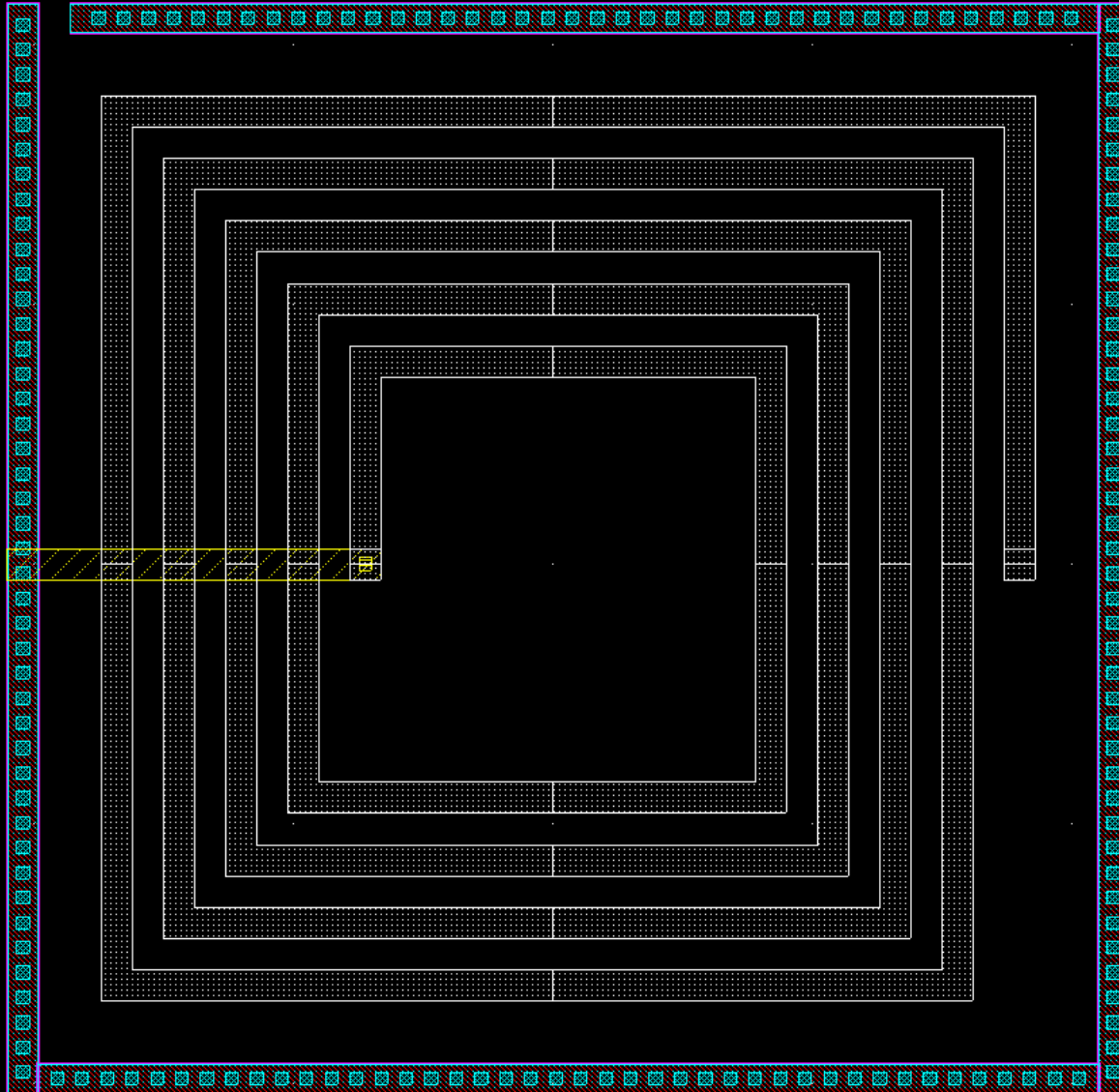
IPL Library: Spiral Inductor



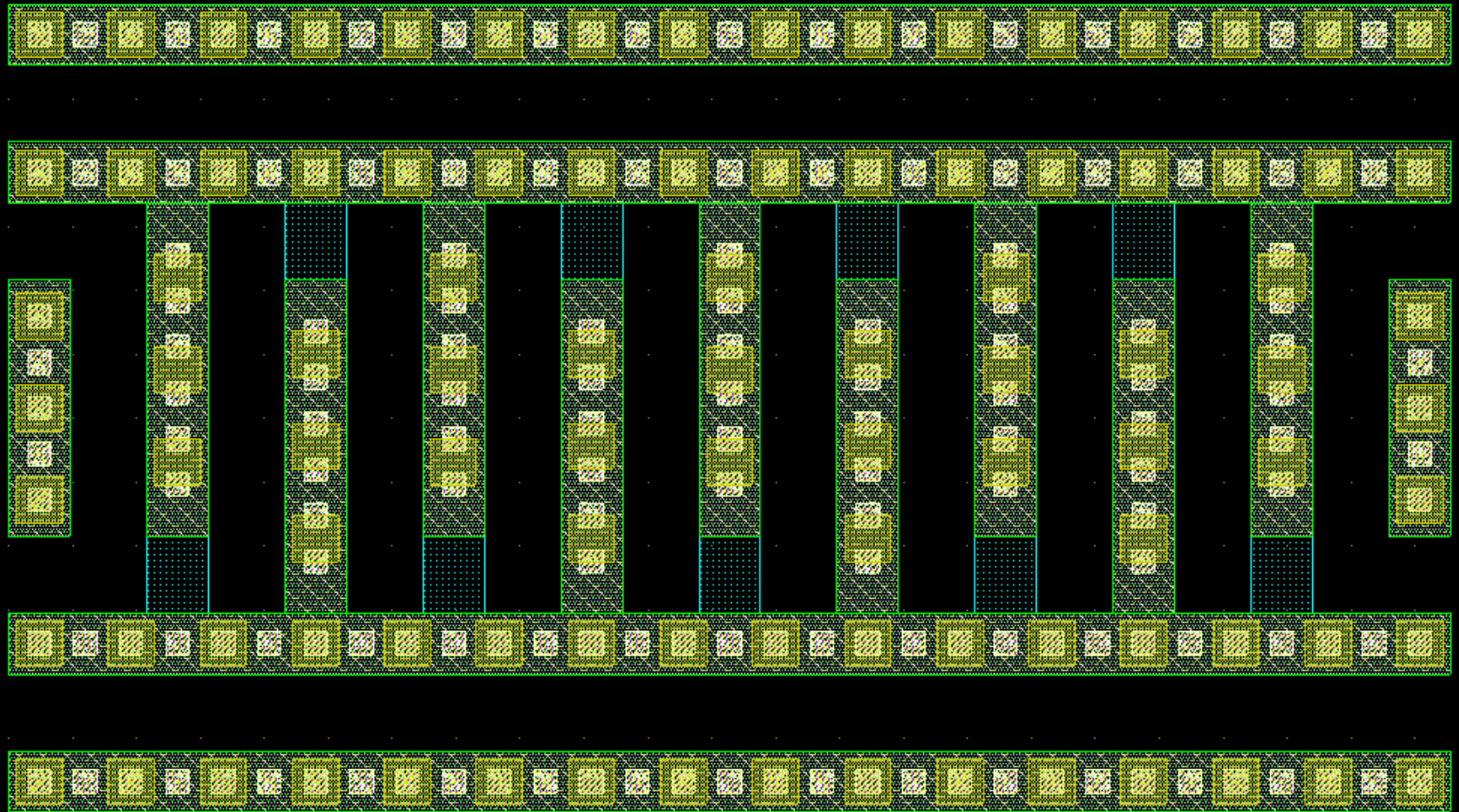
IPL Library: Spiral Inductor



IPL Library: Spiral Inductor



IPL Library: Comb Capacitor



The IPL Validation Ecosystem

ϕ Interoperability

- For all OpenAccess-based tools:
 - Ability to read the PCell from the OpenAccess database
- For layout editing tools:
 - Parameterization of the PCells
 - Stretch handle and auto-abutment in editors
 - Ability to support vertical tool flow integration

ϕ Manufacturability

- Calibre DRC clean
 - Verify natively in OpenAccess database
 - Verify after GDSII stream out

Next Step

- ❖ Download the library and the plug-in from Ciranova's website
- ❖ Join us at DAC 07 San Diego for an IPL lunch workshop
- ❖ Contact me if you are interested in joining the initiative
 - michael@ciranova.com