Synopsys Releases Enhanced Photonic Integrated Circuit Design Automation

Synopsys' PhoeniX OptoDesigner 5.2 Adds Photonic Filter Synthesis and Auto-Routing

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Highlights:

- Adds overall performance improvements and new functionality
- Synthesizes photonic wavelength filters based on user-specified filter response
- Automatically routes phase-insensitive waveguides and metal connections

Synopsys, Inc. (Nasdaq: SNPS) today made available version 5.2 of its PhoeniX OptoDesigner design solution. The latest release of OptoDesigner adds overall performance improvements and new functionality to the industry's standard software for photonic integrated circuit (PIC) layout and verification.

"This first release of OptoDesigner after Synopsys acquired PhoeniX Software represents the beginning of our efforts to raise photonic design to higher levels of abstraction while adding more automation," said Tom Walker, group director of R&D for Synopsys' Optical Solutions Group. "Both of these factors are important for enabling a wider range of designers to create custom photonic integrated circuit designs."

Use High-Level Photonic Synthesis to Create Photonic Filters

To help improve designer productivity, OptoDesigner offers a new high-level filter synthesis module that enables the rapid design and implementation of photonic lattice filters. Designers can enter a desired filter response function, and the software automatically generates an optimized design to meet their parameters. Using a successful methodology already implemented in OptoDesigner, the design is synthesized using technology-agnostic building blocks that are subsequently mapped to any photonic fabrication process using information stored in a foundry-specific or custom process design kit (PDK).

Automate Routing for Phase-Insensitive Photonic Waveguides

In addition to the wide range of advanced connectors for waveguide connections, OptoDesigner includes enhanced layout automation for phase-insensitive photonic waveguide routing. The new waveguide routing module makes use of cost-based maze-routing algorithms to fully automate waveguide routing, including the detouring of waveguides around obstructions. Designers can assign different routing topologies such as bends and waveguide-crossings weighted costs to optimize the routing topology based on circuit performance requirements. The module can also be used to route metal layers for electrical connections to heaters and active photonic devices.

Get Access to Comprehensive Photonic PDK Support

PhoeniX OptoDesigner continues to have the most comprehensive photonic foundry support in the industry, with more than 30 PDKs available from foundries around the world for a range of photonic processes such as silicon, silicon nitride, indium phosphide, polymers, and silica on glass. OptoDesigner has enabled more than 500 tapeouts (including commercial designs) over the last three years.

More Automation to Come

"We are quite excited about the recent acquisition of PhoeniX Software by Synopsys," said Twan Korthorst, director of PhoeniX OptoDesigner solutions at Synopsys. "Our push to higher levels of automation will take a great leap forward as we further integrate OptoDesigner with Synopsys RSoft™ design and simulation products to bring a full front-to-back solution to the market. Our customers are particularly excited about the interface with OptSim Circuit, which can add custom components to a foundry PDK throughout the design flow."

Synopsys is exhibiting the RSoft and PhoeniX OptoDesigner solutions at booths 1822 and 3735 at the Optical Networking and Communication Conference (OFC) in San Diego, Calif. March 13-15.

Availability & Resources

Synopsys' PhoeniX OptoDesigner version 5.2 software release is available now.

Learn more about Synopsys' optical design solutions athttp://www.synopsys.com/optical-solutions.html.

- RSoft products for photonic component and optical communications system design, including PIC design and optimization: https://www.synopsys.com/optical-solutions/rsoft.html
- PhoeniX OptoDesigner for PIC layout and verification, supported by foundry-specific PDKs:https://www.phoenixbv.com/

About the PhoeniX OptoDesigner Product Family

Delivering an easy and cost-effective solution for realizing integrated photonic chips and systems, OptoDesigner is used in more than 30 countries by companies ranging from large OEMs to start-ups, as well as at many of the world's top universities and research institutes. PhoeniX Software is now part of the Synopsys optical solutions family of products.

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As the world's 15th largest software company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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