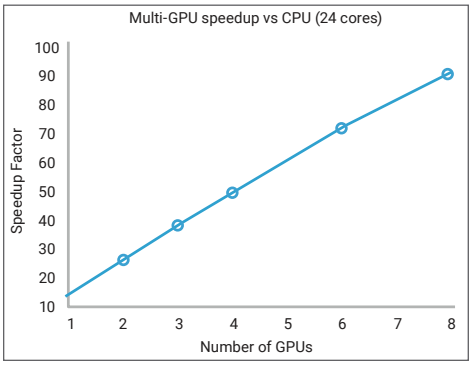
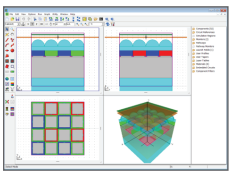
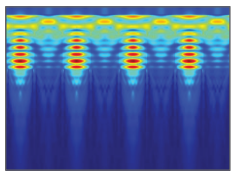
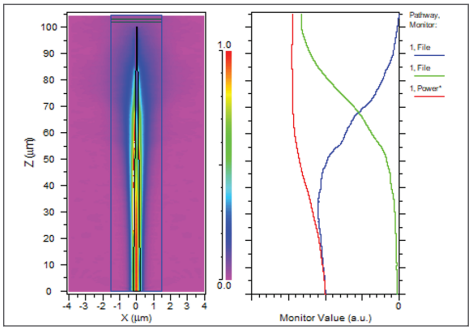
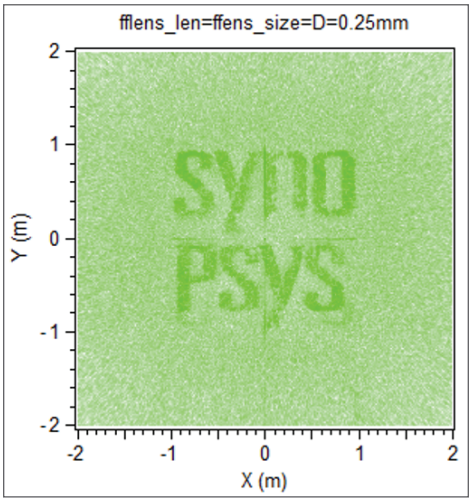
What's New in RSoft Photonic Device Tools











The RSoft Photonic Device Tools provide the industry's broadest portfolio of simulators and optimizers for passive and active photonic and optoelectronic devices, including lasers and VCSELs—all integrated with Synopsys' optical and semiconductor design tools for complete, multi-domain co-simulations.

The RSoft Photonic Device Tools 2024.09 release brings significant enhancements in speed, accuracy, and usability for photonic device simulations. Key updates include GPU acceleration for FullWAVE FDTD, automated power renormalization in BeamPROP BPM, far field optimization in MetaOptic Designer, non-orthogonal domain support in DiffractMOD RCWA, and a transition to Python 3. These improvements are set to revolutionize photonic device simulations, enabling faster and more accurate results.

GPU Acceleration for FullWAVE FDTD

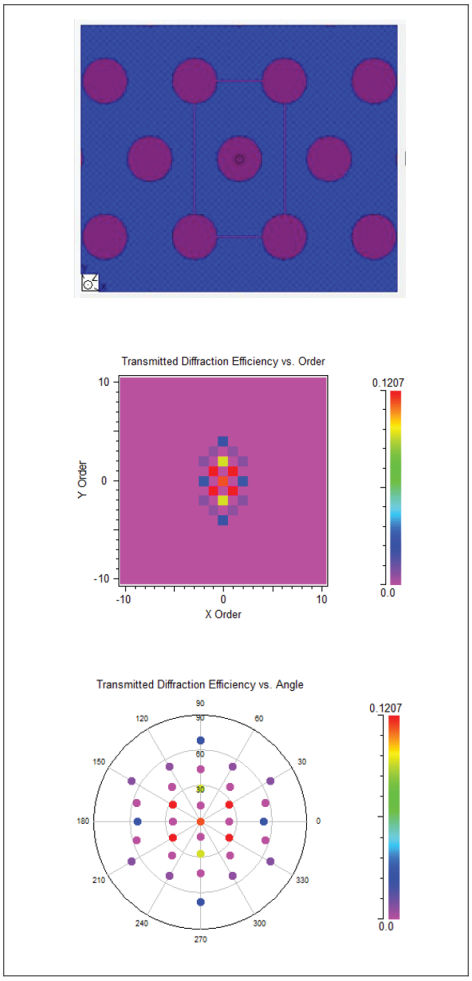
The 2024.09 release introduces GPU acceleration for the FullWAVE FDTD solver, significantly enhancing simulation speed. Utilizing modern NVIDIA GPUs with CUDA 12.3 or higher, this feature delivers up to 91 times faster performance compared to traditional CPU computations. This acceleration enables users to efficiently tackle large-scale and complex simulations, reducing computation times and boosting productivity.

Improvements to BeamPROP BPM

BeamPROP BPM now includes automated power renormalization for the full vector BPM, addressing stability issues in high index contrast structures, such as silicon photonics. This enhancement ensures accurate power calculations even in complex photonic structures with strong reflections. The automated renormalization process simplifies the workflow, providing stable and reliable results with minimal manual intervention.

Improvements to MetaOptic Designer

The MetaOptic Designer now features far field optimization, allowing users to map the far field screen to a near field at a focal point using a thin lens model. This is particularly useful for applications requiring precise control over the far field pattern, such as LIDAR and holographic displays. Users can specify lens parameters, including screen distance and focal length, enhancing the accuracy and flexibility of meta-surface and meta-lens simulations.



Improvements to DiffractMOD RCWA

DiffractMOD RCWA has been updated to support non-orthogonal simulation domains, improving the efficiency of simulations for hexagonal and other non-orthogonal lattice structures. This allows users to define custom lattice vectors and angles, enhancing the accuracy and convergence of simulations for complex periodic structures. The non-orthogonal domain support reduces computational domain size, leading to faster and more efficient simulations.

Changes in Python

The Python interface has been updated to Python 3, ensuring compatibility with modern Python environments and libraries. This update includes new functions for defining materials, setting component properties, and controlling simulation parameters, making the Python API more powerful and user-friendly. These enhancements facilitate the automation of complex workflows and integration with other software tools, providing greater flexibility and efficiency for photonic device designers.

For more information, please contact Synopsys' Photonic Solutions Group at (626) 795-9101, visit synopsys.com/photonic-solutions/rsoft-photonic-device-tools.html, or send an e-mail to photonics@synopsys.com.