

VPIdeviceDesigner – Version 2.5 Python-driven Design Framework for Photonic Devices

Demonstration of new Software Version at OFC 2023

VPIdeviceDesigner offers researchers an easy-to-use photonic device design platform combining a set of full-vectorial finite-difference mode solvers with 2D and 3D frequency-domain beam propagation (BPM) and eigenmode expansion (EME) solvers. Its object-oriented Python interface and focus on effortless results analysis allow for intuitive simulation setups. Yet it offers Python's full flexibility and power. The seamless interface with *VPIphotonics Design Suite*, the industry-leading design software for photonic components and optical transmission systems, enables easy device integration in their target circuit- and system-level applications.

Version 2.5 comes with significant improvements to simulation capabilities, an expanded range of applications, and enhanced software usability:

New Eigenmode Expansion (EME) Method

EME provides a full-vectorial bidirectional field propagator, complementing the already available beam propagation method (BPM) for simulating new types of 3D photonic devices. Its core strengths are accounting for back reflections, accurate modeling of high-index contrast devices (e.g., in silicon photonics), and very fast optimization of device lengths. Application examples include calculating the reflection and transmission spectra of Bragg gratings, and optimizing MMI couplers and long polarization mode converters.

Automatic Layout Parameters Sweeps

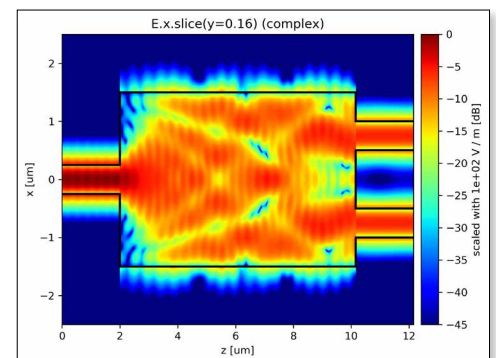
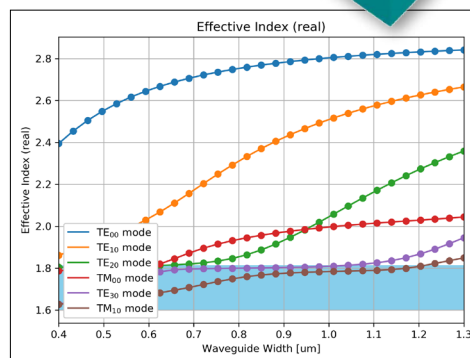
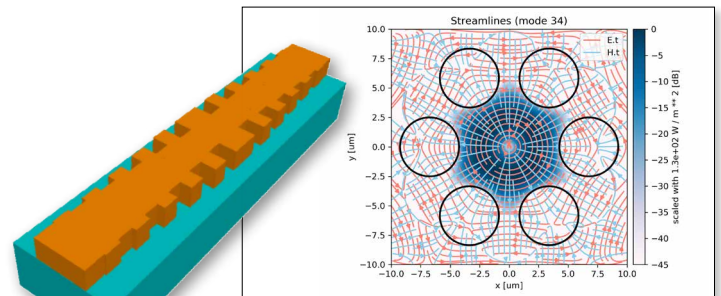
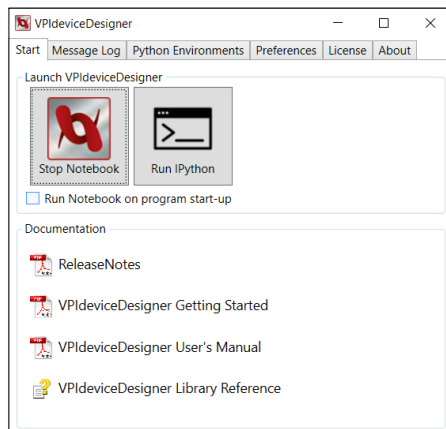
The new Python interface for the mode solvers allows for easy sweeping of an arbitrary layout or mesh parameter (such as waveguide width or grid resolution) together with wavelength sweeps. All mode properties become automatically available as functions of that parameter for evaluation and plotting.

Automated Saving and Retrieving of Simulation Results

Calculated modes and electromagnetic fields can be saved to and loaded from the filesystem, eliminating the need for time-consuming recalculation of previously computed results.

Custom Configuration of Software Environment

The new *VPIdeviceDesigner* launcher simplifies the configuration of the Python environment and license server and provides easy access to the documentation.



**VPIdeviceDesigner Version 2.5 is
on show at OFC 2023, booth 4039.**

OFC 2023

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personalized preview.**

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our
experts!**

About VPIphotonics

VPIphotonics™ sets the industry standard for end-to-end photonic design automation comprising design, analysis and optimization of components, systems and networks. We provide professional simulation software supporting requirements of optoelectronics, integrated photonics and fiber optics applications, optical transmission system and network applications, as well as cost-optimized equipment configuration. Our team of experts provides professional consulting services addressing customer-specific design, analysis and optimization requirements, and delivers training courses on adequate modeling techniques and advanced software capabilities.

VPIphotonics' award-winning off-the-shelf and customized solutions are used extensively in research and development, and by product design and marketing teams at hundreds of corporations worldwide for 25+ years. Over 160 academic institutions joined our University Program enabling students, educators and researchers an easy access to VPIphotonics' latest modeling and design innovations.

For further information, please visit us at www.VPIphotonics.com.