

Release Notes
RSoft Photonic Component Design Suite
Version 2019.09

Photonic Solutions

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SYNOPSYS[®]

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Changes to All Products

- The default installation path has changed:
 - Version 2019.09 installs to the 2019.09\RSoft folder within the root folder c:\synopsys\photonic solutions\ (Windows) or /opt/synopsys/photonic solutions/ (Linux).
 - The same root folder should be used when installing multiple Photonic Solutions suite (RSoft Component, RSoft Circuit/System, and/or OptoDesigner). Multiple versions can be installed.
 - Two new environment variables PHOTONIC_SOLUTIONS_ROOT and PHOTONIC_SOLUTIONS_VERSION are used to set the root folder and the current version. These variables are automatically set on Windows and are used to set the PATH.
- Faster far-field calculation.

Changes to RSoft CAD

In addition to the changes listed in the All Products section, the following changes apply to the RSoft CAD:

- Expanded circuit reference support for .spt OptoDesigner files and .py (Python) files. See documentation for details about automatically parsing script arguments and other options.
- New Python APIs for creating RSoft .ind files and reading/writing RSoft data files, useful for creating complex structures such as metalens, metasurfaces, grating couplers, etc.
- New polarization plot feature to display the spatial variance in the polarization ellipse.
- Expanded vertex reference options for angle/dimension of a vertex to be referenced from another.
- New vertex component, useful for adding connection points to ports and other important locations within circuit references.
- New bdconv option to construct a 'full' data file from a partial file produced via symmetry.
- Added a parameter to specify layer thickness when imported GDS files to the XY plane.
- Improved loading of large GDS files via gds2ind and as circuit references.
- Fixed issue for extended s-bend segments.
- Improved handling of concave polygons.

- Fixed issue where material dispersion plots did not display actual imaginary data.

Changes to FullWAVE

In addition to the changes listed in the All Products and RSoft CAD sections, the following changes apply to FullWAVE:

- New launch mask option to spatially change the amplitude/phase for the launch plane. This mask is effectively multiplied with the defined launch field.
- Faster far-field monitor calculations
- Added overlap monitor feature to allow for using .ind files (from which mode files are computed before performing overlap)
- Expanded crystal axis rotation feature for extended segments. This can be done by setting `crystal_axis_prime=1` which allows the crystal axis orientation to depend on `Zprime` instead of `Z`.
- Added an option to Q-Finder to enable spatial outputs for final run without having it enabled for intermediate runs. This is enabled by setting `qfind_monitor_spatial_final=1`.

Changes to BeamPROP

In addition to the changes listed in the All Products and RSoft CAD sections, the following changes apply to BeamPROP:

- New launch mask option to spatially change the amplitude/phase for the launch plane. This mask is effectively multiplied with the defined launch field.
- Improved FFT BPM algorithm efficiency.
- Option to allow a different near-field storage grid.
- Added support for calculation of custom PDK models using the AWG Utility.

Changes to ModePROP

In addition to the changes listed in the All Products and RSoft CAD sections, the following changes apply to ModePROP:

- New launch mask option to spatially change the amplitude/phase for the launch plane. This mask is effectively multiplied with the defined launch field.

Changes to DiffractMOD

In addition to the changes listed in the All Products and RSoft CAD sections, the following changes apply to DiffractMOD:

- Improved efficiency when using polygon structures.

Changes to FemSIM

In addition to the changes listed in the All Products and RSoft CAD sections, the following changes apply to FemSIM:

- Added effective index and structure outlines to Et/Ht plots.

Changes to GratingMOD

In addition to the changes listed in the All Products and RSoft CAD sections, the following changes apply to GratingMOD:

- Added beta support for calculation of custom PDK models using GratingMOD. Contact us for details.

Changes to BSDF Utilities

In addition to the changes listed in the All Products, RSoft CAD, DiffractMOD, and or FullWAVE sections, the following changes apply to BSDF Utilities:

- User-defined optical properties (UDOP) support backward ray tracing in LightTools to trace selected rays efficiently
- Supports non-uniform incident angles, both theta and phi, in addition to non-uniform wavelength, allowing for more efficient use of computer resources in critical angular regions
- Improved non-uniform grid specification.

Changes to Custom PDK Utility

In addition to the changes listed in other sections, the following changes apply to the Custom PDK Utility:

- Added support for calculation of custom PDK models for active phase shifters and photodetectors. A new ring modulator example is also now included that uses a curved phase shifter.
- Added support for calculation of custom PDK models using the AWG Utility.
- Added beta support for calculation of custom PDK models using GratingMOD. Contact us for details.
- Renamed the S-Matrix and PDK Generation Utility to the Custom PDK Utility.

Changes to Multi-Physics Utility and Sentaurus TCAD Interface

In addition to the changes listed in the All Products section, the following changes apply to Multi-Physics Utility and Sentaurus TCAD Interface:

- Updated material settings and options to be more consistent with TCAD.

- Updated examples to work with TCAD coordinate conventions introduced in the M version.
- Updated the rsoft_tooldb.taz file which provides the interface. Please update this file if you are using TCAD versions after M. See the MultiPhysics manual for instructions for installing this file.

Changes to MOST

In addition to the changes listed in the All Products and RSoft CAD sections, the following changes apply to MOST:

- Improved handling of failed scan points.

Changes to LaserMOD

In addition to the changes listed in the All Products and RSoft CAD sections, the following changes apply to LaserMOD:

- Updated material settings and options to be more consistent with TCAD.