

## ModeSYS

ModeSYS supports the design and simulation of multimode optical communication systems. With a primary focus on data communication applications, ModeSYS allows users to evaluate both temporal and spatial attributes of optical signal propagation. ModeSYS can be used as standalone tool or combined with OptSim to form a comprehensive single mode and multimode optical communication system design suite.

### Benefits

- > Simulates both temporal wave-form and spatial modes of multimode systems combining system-level speed with device-level representation accuracy
- > Virtual prototyping of the multimode optical communication system for increased productivity and reduced time-to-market
- > Fully supports yield analysis through statistical models of multimode fiber defects such as Cambridge 81 and 108 fiber models
- > Interfaces with device-level tools such as RSoft's BeamPROP to simulate at the system level custom components designed at the device level

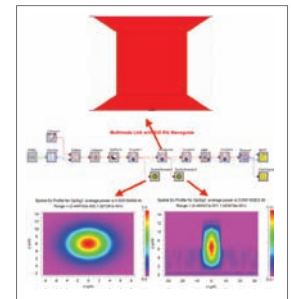
### Applications

*ModeSYS is ideally suited for computer-aided design of multimode optical communication systems including, but not limited to:*

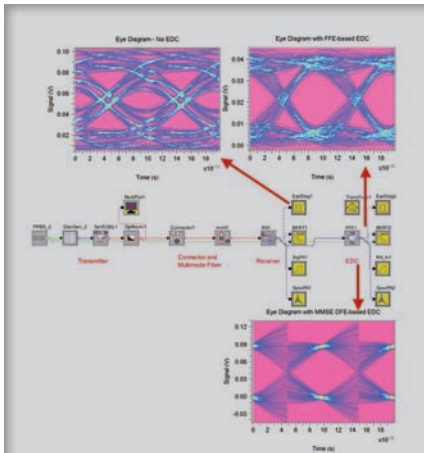
- \* Gigabit Ethernet, e.g. 1GbE, 10GbE
- \* 10GBASE- systems, e.g. SX, LX-4 and LRM
- \* Serial / WDM
- \* FTTx / PON
- \* EDC
- \* Optical Interconnects
- \* FSO

### Featured *Application*

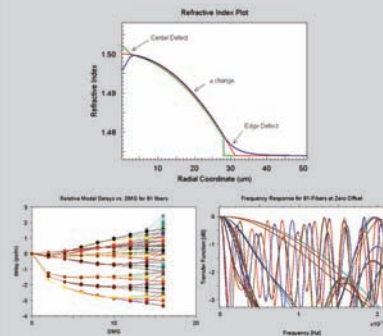
- \* The ModeSYS - BeamPROP co-simulation enables the user to simulate in the context of a ModeSYS multi-mode system simulation a component designed at the device level in BeamPROP
- \* BeamPROP uses the Beam Propagation Method (BPM) to simulate custom components such as waveguides, lenses, couplers, gratings, etc.
- \* The figure depicts an 8-micrometer wide in 4-mm central region having tapers from 14-micrometer at the facets and a total length of 6-mm. The substrate, core (index = 3.5) and layer (index = 1.5) materials have different indexes.



*Using BeamPROP's SOI-based rib waveguide design in ModeSYS to analyze its system level performance*



*Modeling of Electronic Dispersion Compensation (EDC) in ModeSYS. ModeSYS and OptSim include FFE- and DFE-based EDC with MMSE-based optimization.*



*Studying the impact of refractive index profile perturbations using Cambridge-81 and Cambridge-108 models in ModeSYS.*

## FEATURES

- \* Multimode fiber model includes Helmholtz equation solver supporting arbitrary index profile and index profile perturbations.
- \* Extensive set of measurement tools enables the user to analyze key-characteristics of multimode optical communication systems such as:
  - Transverse mode profile
  - Signal over time
  - Signal spectra
  - Eye diagram
  - BER
  - Effective modal bandwidth (EMB)
  - Differential Mode Delay (DMD)
  - Encircled Dlux (EF)
  - Radial power distribution
- \* Mode propagation model supports modal dispersion and Differential Mode Attenuation (DMA).
- \* Comprehensive spatial model using distinct transverse mode profiles supports launch condition, optical coupling, and alignment tolerances analysis.
- \* Extensive library of predefined manufacturer components makes it easy to model commercially available devices.
- \* Deterministic and statistical component parameter sweeping.
- \* Powerful encryption capabilities make protecting your schematics and model parameters easier than ever.
- \* Application Programming Interface (API) for programming languages such as C/C++ for the development of custom user models.

## SUPPORTED SYSTEMS

- » Windows 2000/XP/Vista (32- and 64-bit compatible)
- » Linux (32- and 64-bit compatible)
- » *Contact an RSoft representative regarding other operating systems*