

Multi-Physics Utility

The Multi-Physics Utility[†] is designed to be used in conjunction with any of RSoft's passive device simulation tools. It provides a convenient interface from which perturbations of the refractive index profile of a structure may be included in the simulation. These perturbations can be due to advanced physical processes in the material, such as electro-optic effects, thermo-optic effects, stress-optic effects (i.e., strain), and carrier-induced effects. All material parameters needed to describe these effects can be defined in the RSoft Material Library.

Benefits

- ▶ Expands the power of all of RSoft passive device simulation tools.
- ▶ Fully integrated into the RSoft CAD Environment (page 6).

Applications

- ▶ Electro-absorptive/electro-refractive modulators
- ▶ Thermo-optic switches
- ▶ Electrically biased modulators
- ▶ Birefringence in waveguides and fibers
- ▶ Stress effects caused by cooling during device fabrication
- ▶ Silicon photonic transport modeling

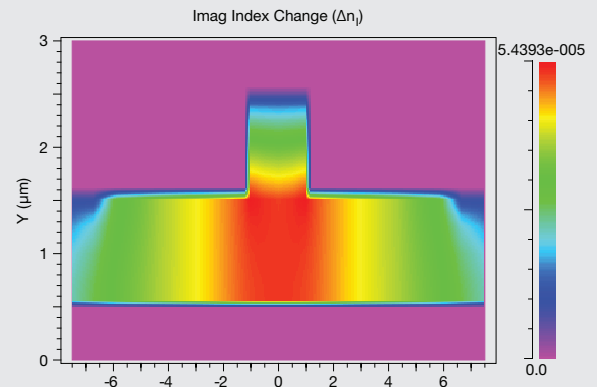
Features

- ▶ Fully integrated with all RSoft passive device simulation tools.
- ▶ Leverages the RSoft material library for all model parameters.
- ▶ Computes index perturbation by solving Poisson's equation (electro-optic effect), thermal equation (thermo-optic effect), stress-strain equation (stress effect), and by using LaserMOD to model carrier-based effects.
- ▶ Automated parametric studies and design optimization using MOST (page 24).
- ▶ Carrier-based effects include fully comprehensive transport and recombination-based models, as well as a large semiconductor- and silicon-based material library.

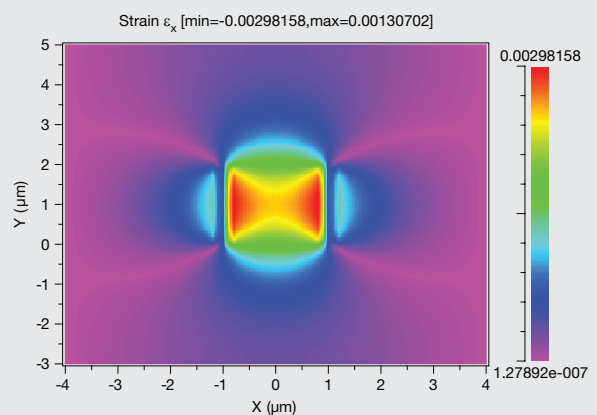
[†]The basic Multi-Physics Utility with electro-optic and thermo-optic effects is included with all passive device tools; the stress and carrier effects are offered as options that are licensed separately.

SEE PAGE 42 FOR SYSTEM REQUIREMENTS

Featured Applications



Change in refractive index, due to carrier effects, in a silicon ridge waveguide buried in SiO_2 .



X component of strain in a silicon ridge waveguide buried in SiO_2 .