OptiBPM 13.1.3 Release Notes

OptiBPM 13.1.3, May 10th, 2023

1 Enhancements and Fixes

1.1 Select simulations resulting in corrupted results files

Some simulations could result in threading conflicts which resulted in a simulation completing with corrupted results files that could not be opened by OptiBPM Analyzer.

1.2 Analyzer can crash when trying to view “Optical Field” or “Refractive Index”

On some Analyzer files attempts to access the optical field view or refractive index from a slice would result in Analyzer crashing.

OptiBPM 13.1.2 Release Notes

OptiBPM 13.1.2, March 1st, 2022

1 Enhancements and Fixes

1.1 Monitor path settings not stored unless saved

It was identified that the design was not saving on initiation of a simulation and in that scenario the monitor path settings were not being stored. Solution was to prevent unsaved designs from going to simulation and confirming with the user a save.

1.2 Object contours were not correct for different sweep iterations for 3D simulations

The edges of objects shown in the simulation results would correspond to the core simulation and would not reflect changes from sweep or script iterations. This has been corrected.

1.3 ADI mode solver initial settings required new values

Based on user feedback it was determined that the initial settings for the ADI mode solver were not well suited for the typical use cases being experienced. They have been updated to set the solver to the complex solver, mode to semi-vector TE, and the mode number to 1.

1.4 Memory leak in Anisotropic simulator

Identified and corrected a memory leak within the anisotropic simulator using FEM mode solver which could under certain circumstances would result in the simulation incrementally (with each step) using more RAM.

1.5 Simulator crash in nonlinear simulations due to thread management

Corrected error in thread management introduces for multithreaded simulations that could result in crashes in nonlinear simulations.

OptiBPM 13.1.1 Release Notes

OptiMode 13.1.1, August 7th, 2019

The motivation for this update is summarized below.

1 Overview

Recent Microsoft updates within the VBScript engine bundled within Windows resulted in an incompatibility between the Windows scripting engine and the analyzer files generated from simulations. This incompatibility results in analyzer files from simulations with scripting or parameters sweeps not opening. While Microsoft has released another update to address the issue, it is currently our recommendation that in addition to updating Windows users should install the latest version of the product to ensure proper operation.

2 Enhancements and Fixes

2.1 Enhancement 77, Tilt Index default should be 1.0

Tilt Index default should be 1.0. The tilt index will almost always take a value of 1. There are some circumstances where it could be a number larger than 1, but the user would expect to enter a value in that case, so make the default value 1.0.

2.2 Issue OT-1, Code V Converter fails to convert ORA data file

The first 64-bit version of this utility had problems reading the ORA format of optical data. This problem is now fixed.

OptiBPM 13.1 Release Notes

OptiBPM 13.1, August 6, 2019

1 Overview

The motivation for OptiBPM 13.1 is to release OptiMode 5. OptiMode 5 introduces a finite element based mode solver. OptiBPM 13.1 also introduces another feature and more enhancements, as summarized below.

2 New Features

2.1 Finite Element Mode Solver

This release introduces a vector finite element method (VFEM\FEM) mode solver. This mode solver has a vector formulation and can accept anisotropic materials. It can use a conformal mapping to calculate modes on bent waveguides.

2.2 Contour outline in OptiBPM Analyzer

The Analyzer of OptiBPM 13.1 can show outlines of the waveguides superimposed on the optical field views. This is implemented in a similar way as seen in the OptiFDTD Analyzer and OptiMode Analyzer.

3 Enhancements and Fixes

3.1 Enhancement 45, Mesh and View Cut Selection

In the Simulation Parameters dialog box in the 2D, 3D Isotropic, and 3D Anisotropic tabs there are boxes for selecting the number of points in the mesh. The selection can be by Number of Points per Micron or by Number of Points. This sometimes created problems for identifying the location of the View Cut when the wafer size or number of points was changed. A radio button has been added to indicate if the user wants to specify the View Cut by mesh point or by coordinate position. This should reduce the incidence of unexpected results.

3.2 Enhancement 60, Add Polarization to 3D Gaussian settings

In the case of Gaussian excitation of vector field calculations, it is necessary to specify the polarization of the excitation. This specification was done in the Simulation Parameters dialog box, but this was confusing. A more logical place to find this information is in the specification of the Input Plane, at the point where the other parameters of the Gaussian field are being defined. Starting with this release, the Gaussian 3D field properties box has a radio button to select the polarization of the field at launch.

3.3 Issue 65, Additive Profile doesn't work as expected

Some issues with the interpretation of Additive Profiles were found. In the case of overlapping waveguides, the waveguide on top is taken as the observed profile. The others are usually ignored. However, if the waveguide is defined as Additive, it is expected it should contribute even if it is not found at the top of the overlap. These issues have been corrected.

3.4 Issue 50, Variables and Functions dialog box operation

This dialog box had incorrect behaviour during the deleting of a row of data. It would ask for selection of a row for deletion even if a row was already selected. This issue has been corrected.

OptiBPM 13.0 Release Notes

OptiBPM 13.0, September 20, 2016

1 Overview

This release of OptiBPM updates all features to a 64-bit application. It also introduces new materials and a new profile that were introduced with OptiMode 4.0. The 64-bit implementation also includes new graphics and an all-new anisotropic BPM simulator.

New Features

1.1 64-bit Anisotropic BPM

In this release Anisotropic BPM is available as a 64-bit application. This increases the size of memory accessible, and will make it possible to run larger BPM simulations. In addition, the simulator has been written again from the beginning. Many improvements were made to the algorithms. They are now more efficient and run more quickly. The new 64-bit anisotropic BPM simulator was found to be more than 5 times faster than the 32-bit anisotropic BPM of OptiBPM 12.

1.2 64-bit Anisotropic Mode Solver

In this release, the anisotropic mode solver is now available from the Input Plane of OptiBPM simulations.

1.3 Display of Optical and Refractive Index Data

In this release the display of data is improved to show both physical coordinates and mesh coordinates. There are also tools to create 2D graphs of physical data from vertical or horizontal cuts. Instructions for using the displays appear on the screen.

1.4 Mixed Material and Circular Profile

This release incorporates a new material and a new profile introduced in OptiMode 4 – Mixed Material and the Circular profile. With these new objects, it is now possible to easily create graded index optical fibres. The specification of the grade is done in the same way as in OptiFiber, where the graded refractive index is specified at a reference wavelength, and the software determines automatically what the doping fractions are from this data.

1.5 Movie of the BPM Simulator Results

The Analyzer can store Z Cuts of optical data. Displayed one at a time, it can show how the field evolves with propagation. This feature makes this display in the form of a movie instead of a sequence of Z Cuts. The BPM simulator can automatically make a movie in .avi format that can be viewed in Windows Media Player. It presents the transverse XY plane and shows the evolution of the optical fields as the wave progresses forward in the direction of propagation, Z.

1.6 Property Browser for OptiBPM Designer

There is now a panel on the left side of the OptiBPM Designer that lists all objects in the project, as well as some global settings and available simulators. The data for review or edit is available from a double click or right mouse click on the items in the tree.

1.7 New scripting editor with enhanced debugging capabilities

In this release there is a new scripting editor. This editor is color coded using an ini file called VBScript.ini. Errors in the script are shown in the script editor view as red breakpoints. Mouse wheel scrolling is now supported

1.8 Simplified Waveguide Profile and Material management

We have removed the strong dependency on the old master.plb file, the former database of Waveguide Profiles and Materials. We have provided import/export functionality supported by XML defined file format. The user may import into a project (or export from it) a Profile and/or Material definition into an independent file. This allows materials to be defined and shared easily. One can run OptiMode, OptiBPM, and OptiFDTD designers at the same time, as these applications are no longer locked out of the master.plb use. Access to master.plb is still available so that users may export their Profiles and Materials. Eventually support for master.plb will be phased out.

2 Enhancements, Fixes, and Corrections

2.1 Enhancement 40 - Improve the Variables and Functions dialog box

The operation of this dialog box has been improved. In this release less effort is required to change the values of User Parameters, and its function has been made more rational and efficient.

2.2 Enhancement 28 – Increase the limit on Number Of Displays

In the Simulation Parameters dialog box there is a panel, User interface configuration. It has a field called Number of displays. Previously the interface will not let this number be more than 999. There are some circumstances in which more than this is desirable. The limit has now been increased to 99999.

3 Known Issues with OptiBPM

3.1 VBScript number formatting on non-US-English operating systems

When converting float type numbers into their string representation, VB Script follows the local settings of the operating systems. In some countries, the customary decimal separator is comma instead of the decimal point. In this case, passing a double precision number as a string is impossible, because the format is invalid. It is especially visible when setting expressions on waveguides or other objects, which expect a string representing a float-point number according to IEEE standard.

Workaround – A simple workaround for this behaviour is to include the following code, near the beginning of the script. We suggest copying the comments as well, so one can remember why this code has been added to the script in the first place:

```
' This option ensures that all variables are declared before being used
' It helps with accidental errors in script programming and debugging
Option Explicit

' Set the VB Script engine to conform with English-US standard.
' It makes sure that the number-to-text conversion conforms with the IEEE float-point
' number representation standards.
' In some countries a comma is used instead of the decimal point, which renders passing
' a double number as a string impossible i.e. invalid format. It is especially important
' when setting expressions on waveguides or other objects, which expect that strings
' representing floating point precision numbers have the standard format
Dim nOriginalLocale
nOriginalLocale = SetLocale("en-us")
'Use the SetLocale( nOriginalLocale ) to switch back to (restore) your country specific
'settings
'It affects format of displayed (retrieved) items like date, time, currency etc.
```

3.2 Issue 1361 - Protection key not found after application goes into hibernation

Description - Some computers provide a power saving feature, Hibernation. If available, this feature is controlled by opening Power Options in Control Panel. Clicking the Hibernate tab, and then selecting the Enable hibernate turns it on. After the computer goes into hibernation, it won't find the Optiwave protection key, and the simulation will stop with a message that the protection key can't be found.

Workaround - Disable the hibernation feature of the computer.

3.3 Issue3332 - Unexpected end of statement in VBScript because of compound label name

Description - Waveguides in the layout all have unique names. When the Generate Layout Script feature is used to make a script version of the layout, it uses the waveguide name as the variable name in the new VB script. This makes the text readable, but can lead to trouble if the waveguide was named something that is not a legal name in Visual Basic. The most common trouble is the use of two or more words in the name - e.g. "Wave Guide 1" instead of "WaveGuide1". White spaces are allowed in the waveguide name, but they cannot be translated to a single variable in Visual Basic. The auto-generated script cannot be executed because there are illegal names in it.

Workaround - If you name the waveguides in the layout yourself, use a single word name (don't use white spaces in the names). This issue doesn't appear if you use the application's auto generated name.

