

NEWS RELEASE

Phoenix Software introduces 3D BPM integrated optics simulation tool

Enschede, the Netherlands, March 1st, 2010. In addition to its existing advanced software solutions for integrated photonics design, a full vectorial beam propagation method simulator has been added. This 3D BPM capability is based on a novel implementation of a Fixed-grid Finite Element numerical engine. The benefit of this method is the increased simulation speed while obtaining the same accuracy as with the common Finite Difference implementations of the competition. Especially for small features and disturbances this new algorithm delivers its great potential.

The 3D BPM module is available in OptoDesigner, the integrated layout and propagation simulation solution of Phoenix Software. Existing customers with a service support contract can download the latest version of OptoDesigner and gain full access to this new functionality. Please contact support@phoenixbv.com for your download details. Interested companies and institutes can evaluate the software for free for a period of 30 days, please contact sales@phoenixbv.com.

Technical details

Despite advances in more general, omnidirectional simulation methods, unidirectional Beam Propagation Methods (BPM) are still used extensively in the modeling of integrated optical components. The most prominent of these are finite difference (FD) and finite elements (FE). An advantage of FD is that the structure of the matrices in the equations is constant from one step to the next; in those parts of the window in which nothing changes the matrix elements do not need to be re-calculated. However, material interfaces between grid points are hard to take into account. The FE scheme, on the other hand, can deform its mesh to follow the material interfaces. The mesh thus needs to be recreated each step, implying a potentially expensive re-gridding step, a recalculation of all involved matrices, and interpolation to the new finite element nodes.

Phoenix Software presents a new FE full-vectorial BPM. The FE grid is kept constant from one calculation step to the next, which helps in avoiding recalculations of matrices. Contrary to standard FE methods, inside each grid cell, the refractive index may be arbitrary, so it is not necessary to adjust the grid to the interfaces. All distinct material sections in a cell are taken into account in the calculation of the integrals that result from the weak formulation of Maxwell's equations.

About Phoenix Software

Phoenix Software is an independent hightech company headquartered in Enschede, the Netherlands, which develops, sells and supports worldclass software solutions for the micro and nano technology marketplace. Founded in 2003 the company currently supports more than 120 companies and research institutes worldwide through its subsidiaries and network of sales representatives. Typical products include software for mask layout and process flow visualisation, software for photonics simulations and the leading manufacturing execution system and technology knowledge base dedicated to the industry: the Living Database.

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