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GSvit in a nutshell

GSvit is an open source software for electromagnetic field propagation calculations via Finite Difference in Time Domain method (FDTD). In this numerical technique, electric and magnetic field values (vectors) in some computational volume are calculated iteratively, solving Maxwell equations, step by step. In order to do this, computational volume needs to be discretized very densely, which affects computational demandness of FDTD, being very large both in processor time and in memory.

Original motivation for writing GSvit was to explore parallelization possibilities offered by graphics cards in the field of numerical electromagnetics. By successive improvements it became rather universal software that can be used in different fields of physics and engineering and we continue in improving the applicability for different tasks. Already now, GSvit features both command line and graphical user interface, can be run on different operating systems and can be used with many different geometries, materials, source conditions, boundaries, etc.
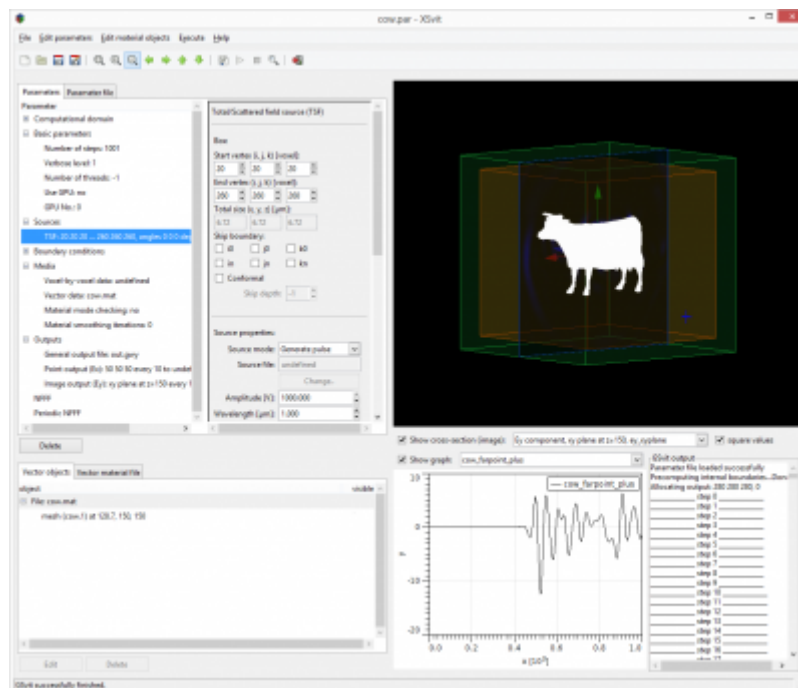
To start your work with GSvit, follow the instructions on Gettng started page.

References

If you find GSvit valuable for your work, you can cite some of our articles describing its core parts:

P. Klapetek, M. Valtr: Near-field optical microscopy simulations using graphics processing units, Surf. Interface Analysis, 2010, 42, pp 1109-1113

P. Klapetek et al: Rough surface scattering simulations using graphics cards, Applied Surface Science, 2010, 256, pp 5640-5643.

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