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Outputs

FDTD handles large data arrays and there are numerous possibilities what to show as a result of the calculation. The most straightforward are the instant values of the field amplitudes at some points in the computational domain, or different cross-sections through it. As an opposite example, the most complex (at least from what can be done in GSvit) are the near-field to far-field transform results, that are accumulated from the boundary values during the whole calculation.

Most of the simple outputs are put to a single [Gwyddion](#) file (which can be chosen by user), which can accommodate both computational volume cross-sections and various graphs. Whatever we found suitable for it we put to the Gwyddion file. Not everything is suitable for it, e.g. if one wants to work with multiple point outputs it is easier to have them as text data files. These text files can be also visualized already during the calculation in XSvit. We continuously work on adding as many options for data saving as possible.

The **point output** lists values of the given component of the electric or magnetic field (or all of them) into a text file, possibly skipping some of the steps to reduce the file length (and on GPU to save time of CPU-GPU synchronization).

To store the planar cross-sections of the computational volume we can use **image output** (that places the cross-section to the common Gwyddion output file) or **plane output** (that places the cross-section to a text file). Not only the field values but also the local material parameters can be output.

Similarly the **volume output** is used to plot the instant values of any of the arrays to a text file, that can be either ASCII, ASCII VTK, or binary.

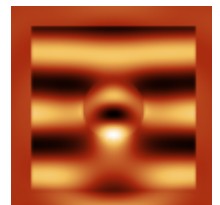
We can also output **sum of electric field intensity** or local absorption extracted from bounding box and material with given properties (permittivity can be used to distinguish between the different materials). The same can be done for a tabulated material, where the material from a database is used.

Finally, we can store **optical force** acting on a given volume of the computational domain. Optical force is calculated using Maxwell stress tensor. No media should cross the boundary and scatterer to be evaluated should be placed inside the evaluation volume.

A special type of outputs is also [Near-field to far-field transform](#).

Sample parameter file: [outputs](#).

A 200x200x200 computational domain with various basic outputs.



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