Re: Array design with Meep simulation scripts

g.l. gragnani <gianluigi.gragnani@unige.it>

Mon 2/15/2021 11:42 PM

To: Hanson, Jordan <jhanson2@whittier.edu>
Cc: Alessandro Fedeli <alessandro.fedeli@unige.it>

Dear Jordan,
thank you very much for your prompt reply.
Your script is working like a charm, and is a very good starting point to learn Meep.
Collaborating is a great idea. We are mostly interested in 3D modelling for antennas and RF devices.
We look forward to hearing from you.
Best regards.
Alessandro and Gian Luigi.

On 2/13/21 11:10 PM, Hanson, Jordan wrote:

> Dear Alessandro and Gian Luigi,
> It's exciting to hear from you. At the beginning of last summer, I read your review article about open-source antenna modeling (Electronics 2019, 8, 1506; doi:10.3390/electronics8121506). I was searching for a way to model phased arrays while avoiding proprietary software, and your excellent paper showed me that it can be done. Separately, I heard about Meep from a colleague who modelled RF propagation in ice. I noticed in your paper that Meep (and other codes) was mentioned but that the analysis focused on gprMax, openEMS, and NEC2. This is reasonable since packages like Meep are stranger to implement. Based on one example I found in https://meep.readthedocs.io/en/latest/, I was able to calculate radiation patterns. The next step is to work on S-parameters (S11). I have attached a simple example, written in Python3, for a N=16 one-dimensional array of Yagi antennas with uniform index of refraction in two-dimensional space. Please let me know if you can get it to run. Would you be interested in collaborating in the future? We could figure out how to use the parallel features of Meep and how to perform the S-parameter calculations.
> Best Regards,
> Jordan Hanson
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> MEEP Documentation
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> Meep is a free and open-source software package for electromagnetics simulation via the finite-difference time-domain (FDTD) method spanning a broad range of applications.. Key Features. Free and open-source software under the GNU GPL.; Complete scriptability via Python, Scheme, or C++ APIs.; Simulation in 1d, 2d, 3d, and cylindrical coordinates.; Distributed memory parallelism on any system ...
> meep.readthedocs.io

From: g.l. gragnani <gianluigi.gragnani@unige.it>
Sent: Saturday, February 13, 2021 1:43 AM
To: Hanson, Jordan <jhanson2@whittier.edu>
Cc: Alessandro Fedeli <alessandro.fedeli@unige.it>
Subject: Array design with Meep simulation scripts

Dear Prof Hanson,
we have read your very interesting paper "Broadband RF Phased Array Design with MEEP: Comparisons to Array Theory in Two and Three Dimensions", recently appeared on Electronics.
As you know open-source software for electromagnetics is among our research interests. We would like to kindly ask you whether it is possible to obtain some of the simulation scripts as mentioned in the paper.
Thank you very much in advance.
Best regards.
Alessandro Fedeli
Gian Luigi Gragnani

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