AToM

ANTENNA TOOLBOX FOR MATLAB

AToM Features

Proposal of AToM features to be advertised

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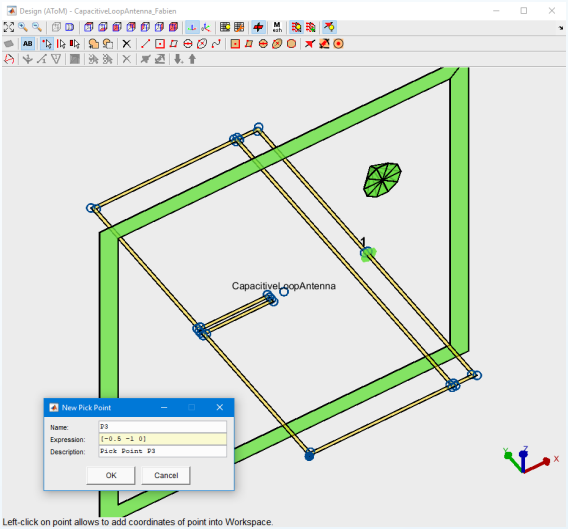
Outline

1. AToM DesignViewer
2. AToM Workspace
3. AToM History
4. AToM Syntax
5. Advanced Mesher
6. GEP With Extended Support For CMs
7. Results Browser
8. and more...

AToM DesignViewer

Motto

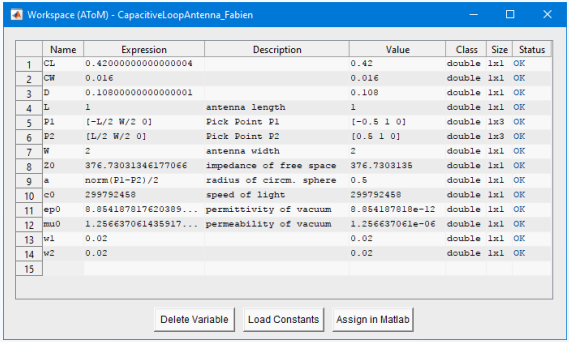
"Draw the antenna interactively, visualize mesh grid, feeding scenarios, and boundary conditions. Take the advantage of AToM Workspace."



AToM Design Viewer with a capacitive loop antenna and active pick-point tool. The PEC symmetric plane is enabled and highlighted by green color.

Motto

"Create own variables and use them freely throughout the AToM to parametrize all your models. AToM Workspace is the primary gateway between variables in MATLAB workspace and AToM."

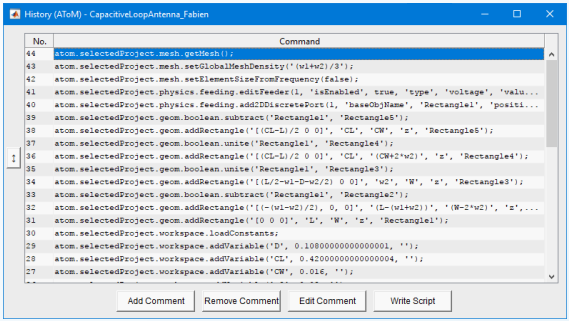


	Name	Expression	Description	Value	Class	Size	Status
1	CL	0.42000000000000004		0.42	double	1x1	OK
2	CW	0.016		0.016	double	1x1	OK
3	D	0.10800000000000001		0.108	double	1x1	OK
4	L	1	antenna length	1	double	1x1	OK
5	P1	[-L/2 W/2 0]	Pick Point P1	[-0.5 1 0]	double	1x3	OK
6	P2	[L/2 W/2 0]	Pick Point P2	[0.5 1 0]	double	1x3	OK
7	W	2	antenna width	2	double	1x1	OK
8	Z0	376.73031346177066	impedance of free space	376.7303135	double	1x1	OK
9	a	norm(P1-P2)/2	radius of circm. sphere	0.5	double	1x1	OK
10	c0	299792458	speed of light	299792458	double	1x1	OK
11	ep0	8.8541878176203889...	permittivity of vacuum	8.8541878176e-12	double	1x1	OK
12	mu0	1.2566370614359517...	permeability of vacuum	1.256637061e-06	double	1x1	OK
13	w1	0.02		0.02	double	1x1	OK
14	w2	0.02		0.02	double	1x1	OK
15							

List of user-defined AToM variables which parametrize the capacitive loop antenna.

Motto

"Rely on automatic MATLAB-executable record of your AToM session. Modify it, send it, share it."



Record of AToM History for capacitive loop antenna.

Motto

"Have a full control of the AToM workflow. Access all powerful low-level functions and features. Combine freely AToM commands and other MATLAB commands."

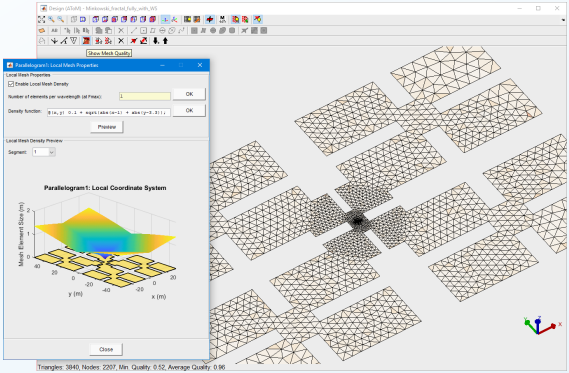
```
% (sample of code calculating presented antenna):
fList = models.utilities.constants.c0/(2*2*2*(L+W)) * linspace(1/2, 5, F);
atom.selectedProject.physics.setFrequencyList(fList);

% Solver requests
atom.selectedProject.solver.MoM2D.setProperties('resultRequests', ...
    'basisFcns, iVec, mesh, vVec, zInActive, zInMutual, zMat, zMatD');

% Start solver (with default options)
atom.selectedProject.solver.MoM2D.solve;

% Process results:
R = atom.selectedProject.solver.MoM2D.results;
Zin = R.zInActive.data;

figure;
plot(fList, real(Zin), fList, imag(Zin));
```

Segment of MATLAB code with AToM-executable commands (start of MoM solver and acquisition of the results).

Advanced Mesher

Motto

"Use fast and versatile AToM mesher. Set up local density functions. Enjoy various settings of uniform mesh grid and full support of symmetries."

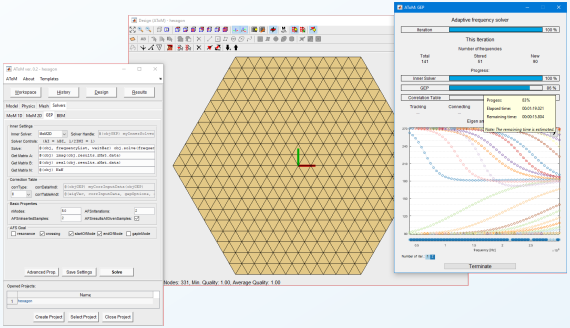


Complex fractal body discretized using local density function (discretization is finer where high amplitudes of current density are expected).

GEP With Extended Support For CMs

Motto

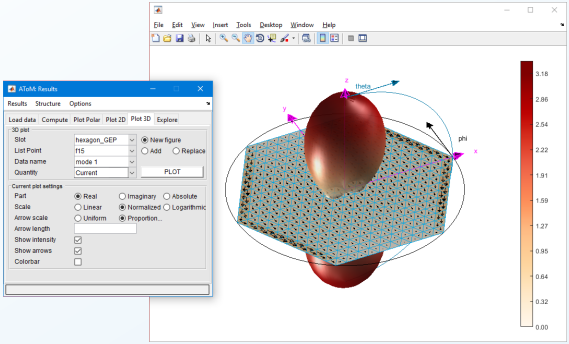
"Try out the far most advanced characteristic modes decomposition package. Adaptive tracking, accurate decomposition, symmetry based-tracking, scalable GEP definitions. . . all at your disposal."



Characteristic mode decomposition of hexagon with perfectly symmetrical mesh grid.

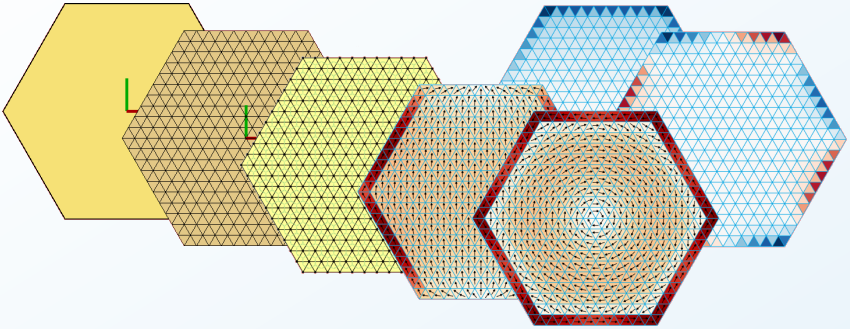
Motto

"Analyze your results swiftly with standalone AToM Results Browser or dig directly into the deep study with underlying elementary functions."



Radiation pattern of dominant characteristic mode on hexagon.

and more...



From antenna body, through discretization grid and definition of basis functions to characteristic modes...

Questions?

For a complete PDF presentation see capek.elmag.org

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