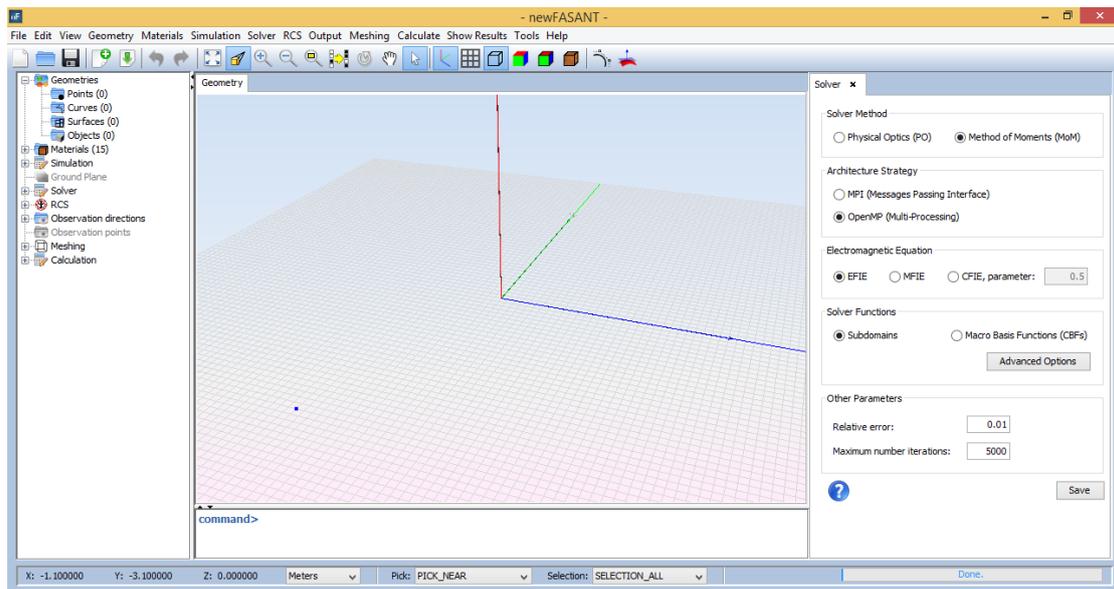
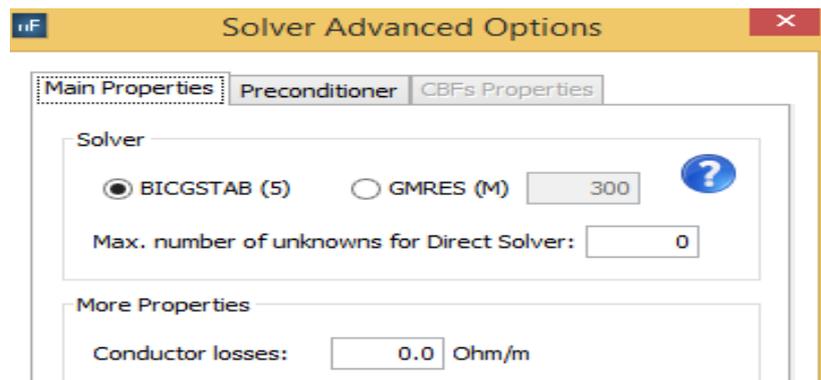


Setting MONCROS running parameters.

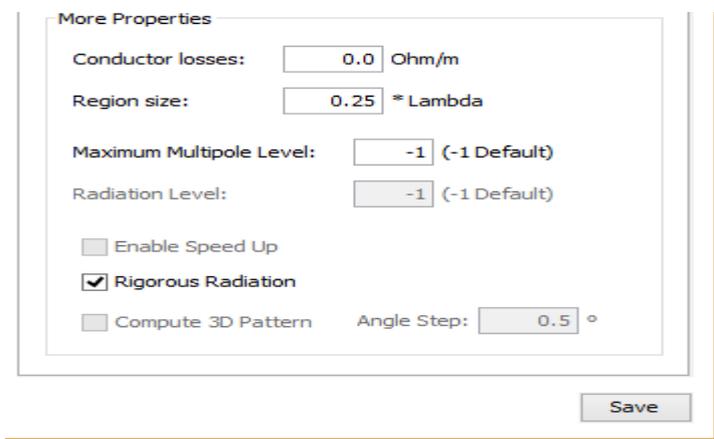


- Physical Optics for compute the RCS considering only the illuminated subdomains by the incident wave and with the PO current (only simple reflection).
- Method of Moments for compute the RCS obtaining by MoM the current in the subdomains.
- MPI choice of parallelization strategy that shall be selected for computer with distributed or shared memory.
- OPENMP parallelization strategy for computers with shared or distributed memory. It is preferable to select OPENMP for computer with shared memory.
- Select EFIE for problems with open surfaces. Also it can be applied for closed surfaces. It is possible to use a combined approach using EFIE for some surfaces and CFIE for closed surface (that is explained in other document) .
- We never use MFIE.
- Use CFIE for closed metallic surfaces. However, in general EFIE gives more accurate results. When using CFIE be sure that all the normal vectors of surfaces is pointing out of the volume enclosed by surfaces, otherwise severe errors will appear.
- Subdomains for using newFASANT conformed rooftop subdomains.
- CBFs For use Characteristic Basic Functions. Is more efficient than subdomains, but for cavities is not as accurate as subdomains.
- Usually a relative error of 0.01 solving the MoM Equation is enough. More accuracy can be obtained using an error of 0.001.
- Maximum number of iterations solving the MoM Equation. Use the default value of 5000



Three different approaches are available for solving the MoM Integral Equation:

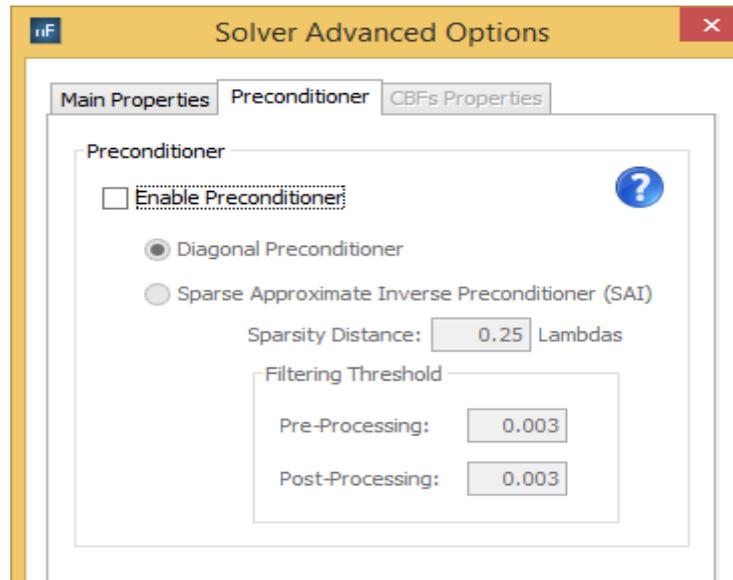
- BICGSTAB(5) it is an iterative solver. It is the most used for large problems
- GMRES(M) it is an iterative solver, that can be an alternative to the BICGSTAB(5) when the last fails in some problems.
- Direct Solver Uses Gaussian method for invert the full MoM matrix. Very accurate, but only for small problems, say less than 10,000 unknowns depending of the computer. User shall introduce in the Max. number of unknowns a value greater than the number of unknowns of his actual problem. If the value is less than the actual number of unknowns the iterative approach will be used.
- Conductor losses, surface impedance in conductor due to “skin effect” .



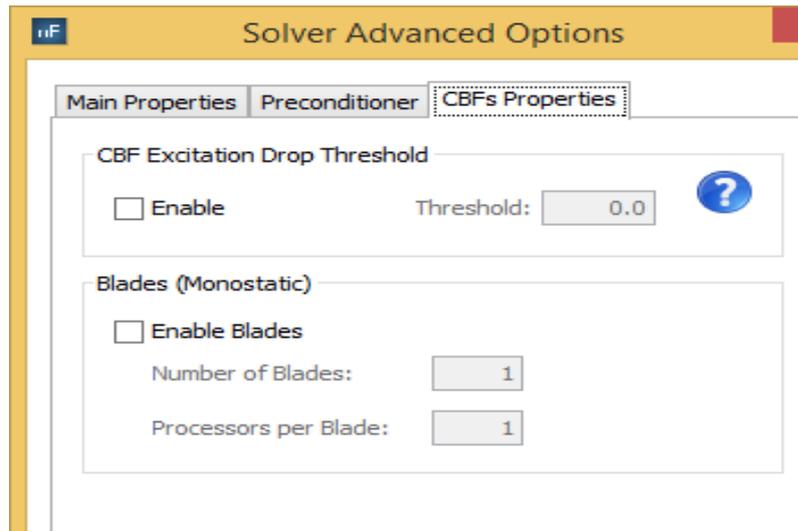
- Region size, it is the size of the MLFMM cube at level 0. We select by default a size of 0.25 lambda. For problems with a large sampling density in the meshing, say more than 10 samples per wavelength a size of 0.125 lambda can accelerate the computations. For problems with a low sampling density, say less than 6 samples per wavelength, a size of 0.5 lambda can be used to increase the accuracy.

- Maximum Multipole Level. It is the maximum level of the MLFMM to be considered. Selecting the default value of -1 the maximum level is fixed automatically and corresponds to this one that the cube of the higher level encloses completely the geometry of the problem. To maximize the efficiency select the default value.

- Rigorous Radiation. Click on this box to compute the scattered field without interpolating the multipole of the higher MLFMM cube. The far field is computed directly from the current. It is the more efficient way for compute the scattered field in only one direction, as it is usual with monostatic RCS.
- Compute 3D Pattern. This option is enabled only when bistatic RCS is selected. By selecting this option the 3D bistatic RCS pattern is computed with the angular sampling indicated in the Angle step box.



- Using Direct Solver do not select "Enable Preconditioner". If this option is selected not direct solver will be used.
- Diagonal Preconditioner. This preconditioner only works properly if the sampling density is greater than 7 samples per wavelength. It is the best for dielectric. Some times is better than SAI.
- SAI. It is the the best preconditioner although not always works. By default select this one. It works best with sampling densities higher of 6 samples. Increasing the Sparsity distance can increase the convergence speed but increases the preprocessing time than needs SAI. The FilteringThreshold parameters has a strong effect in the CPU-time for preprocessing and iterations and on the convergence ratio. Decreasing these parameters increases the convergence ratio but also the CPU-times. Best convergence ratio is obtained when both parameters are set to 0.0



- This window is enabled only when CBFs have been selected in the main solver menu. It is applicable only to CBFs.
- CBF Excitation Drop Threshold permits to reduce the total number of CBFs and therefore the CPU-time and RAM memory required. This reduction is made by discarding the CBFs in each surface block that have a low correlation with the incident field in the surface.
- Enable Blades permits to optimize the behavior of running many RCS monostatic directions in a computer cluster composed of n blades (nodes). Each blade will compute the TCS for a set of directions. This way permits to optimize the CPU-time because the massive passing of messages between blades is minimized.