



SScaTT - Superellipsoid Scattering Tool description

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SScaTT (Version 1.1.4, 17.01.2003) is a graphical user interface to generate, visualise, do light scattering computations and to plot the results for superellipsoids.

SScaTT generates and visualises superellipsoids in the obj-file format and uses a console based program written in FORTRAN for scattering calculations. The computation program will read various file formats (dxf, obj, oogl, smf, vmrl) such that light scattering by other bodies can also be computed. Some sample obj-files of other particles are included in this distribution.

The Hyperfun program (www.hyperfun.org) is suitable for generation of other particle forms. For conversion to obj, visualization and scaling you may use Deep Exploration (www.righthemisphere.com), for grid reduction you may use Rational Reducer Professional (www.rational-reducer.com). To increase the number of faces of a body you can use a divide by four subdivision scheme implemented in the Triangles DOS program (www.geocities.com/Athens/Academy/8764/triangdoc.html).

Both the superellipsoid generation parameters and the scattering calculation parameters may be saved in files.

The program assumes that the surface of the scattering particle consists only of triangles! All dimensions are in microns. The maximum aspect ratio of a scattering particle should not be larger than 4 to 1.

The Differential Scattering Cross Section in the form of scattering diagrams is computed and displayed by the diagram visualisation section of the interface. The incident plane wave is along the z-axis.

A separate tool to compute scattering diagrams, orientation averaged scattering, cross sections, efficiencies and the Mueller matrix from the T-matrix computed by SScaTT is also available in this CD-ROM.

References

- [1] Thomas Wriedt: Using the T-Matrix method for light scattering computations by non-axisymmetric particles: Superellipsoids and realistically shaped particles. Part. Part. Syst. Charact 19 (2002) 4, 256-268.

- [2] Adrian Doicu, Yuri A. Eremin, Thomas Wriedt: Acoustic and Electromagnetic Scattering Analysis using Discrete Sources. Academic Press, July 2000.

Comments are welcome, further information is available from
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