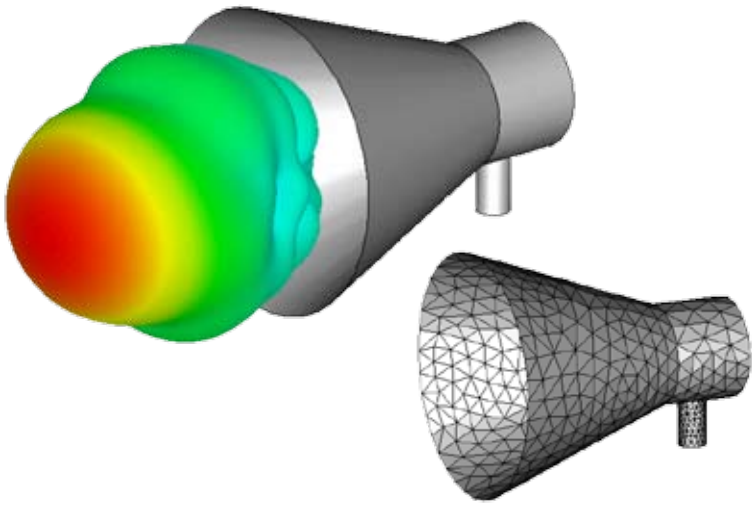
CST MICROWAVE STUDIO
INTEGRAL EQUATION SOLVER

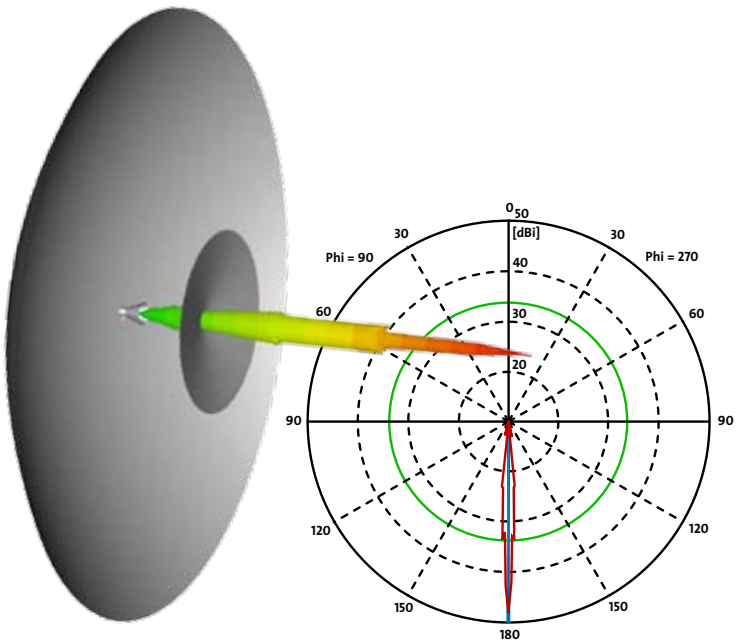
CST MICROWAVE STUDIO®'s Integral Equation solver is a new module for the accurate 3D analysis of electrically large structures. It is based on the Multilevel Fast Multipole Method (MLFMM) and is used for antenna coupling and radiation pattern analysis. Typical applications include antenna placement on aircrafts and radar cross section (RCS) calculations of large scattering objects.

METHOD OF MOMENTS AND MLFMM

- Discretization by the Method of Moments
- Surface integral formulation combined with the Multilevel Fast Multipole Method (MLFMM)
- Surface mesh generates fewer mesh cells than common volume methods
- MLFMM's computational effort scales efficiently with problem size



Farfield and surface mesh of a horn feed



Farfield of a Cassegrain antenna

KEY FEATURES

- Iterative MLFMM solver and direct solver
- Up to 3rd order discretization elements including mixed order
- Flexible MLFMM accuracy control and powerful preconditioner
- PEC and lossy dielectric materials
- Excitation sources:
  - Discrete ports
  - Plane waves
  - Farfield sources
  - Waveguide ports
- Open and electric boundary conditions
- S-parameter, farfield and RCS calculation
- Fast RCS sweep

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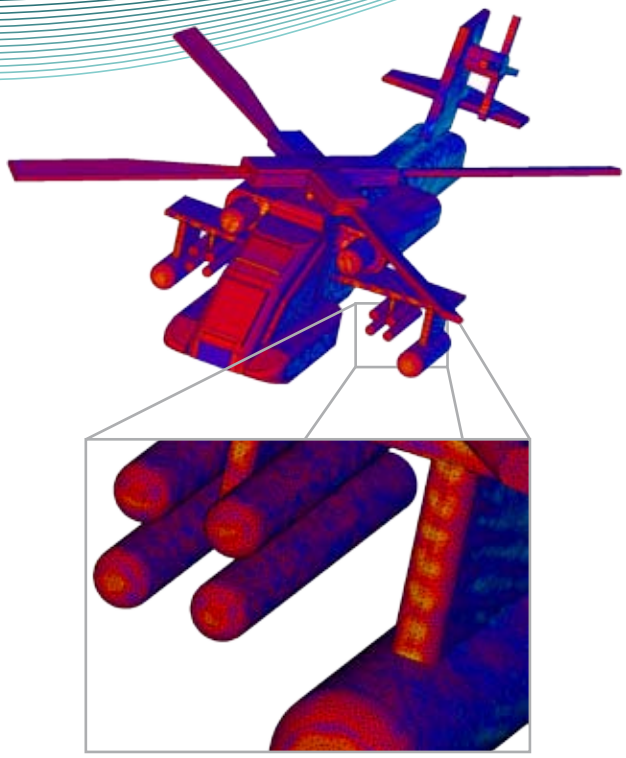
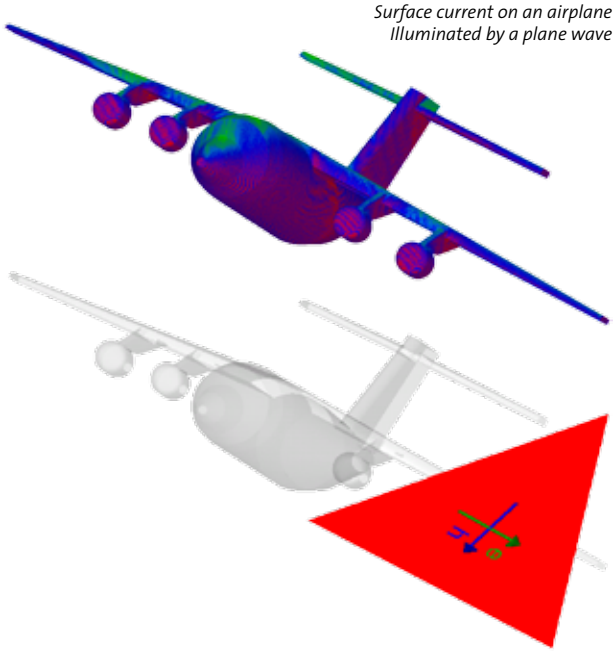
CHANGING THE STANDARDS



Surface mesh and surface current of a helicopter

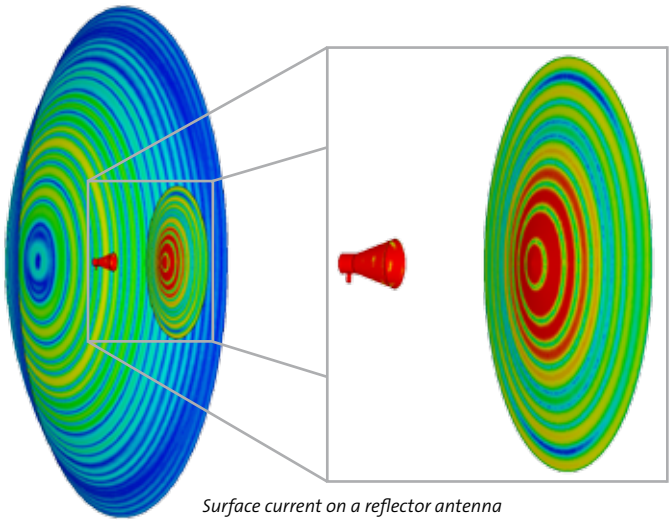


Surface current on an airplane
Illuminated by a plane wave

GENERAL FEATURE OF INTEGRAL EQUATION SOLVER

- Embedded in CST MICROWAVE STUDIO®
- Robust automatic surface mesh generation
- Intuitive parametric 3D modelling
- Powerful CAD import, parametrization of imported CAD data
- Automatic multi-dimensional parameter studies & optimization
- Powerful user-definable postprocessing
- 64bit support
- Easy report generation
- VBA compatible macro language

3D RCS farfield plot



Surface current on a reflector antenna

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