INTEGRATED
ENGINEERING SOFTWARE

www.integratedsoft.com

CHRONOS

Finite Difference Time Domain Analysis Software

Modeling and simulation of many RF applications and antennas present challenges in terms of speed, required memory, and accuracy. **INTEGRATED's** time domain solver **CHRONOS** addresses these demands dynamically in 3D RF and microwave applications.

CHRONOS has powerful innovative techniques including Finite Difference Time Domain (FDTD), Method of Moments (MoM), and the Finite Element method (FEM). These solvers are available in the same package to allow you to select the best method for any problem.

Engineers and scientists depend on **CHRONOS** for the design and analysis of high frequency components including:

- Planar microwave and antenna structures
- Wire antennas
- UWB antennas
- Microwave circuits, waveguides and coaxial structures
- Near field and far field applications

Choose your design environment

For many systems, it is important for multiple solvers to be combined. **INTEGRATED** has developed comprehensive solutions for scientists modeling prototypes that require multiphysics analysis. **INTEGRATED** proudly offers a complete suite of electromagnetic tools, ranging from low frequency to light waves, from static to complete transient solutions. **INTEGRATED**'s software programs can be seamlessly coupled to thermal analysis for an even more thorough development.
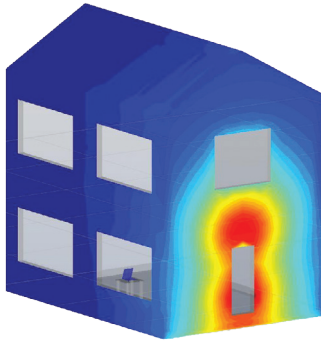
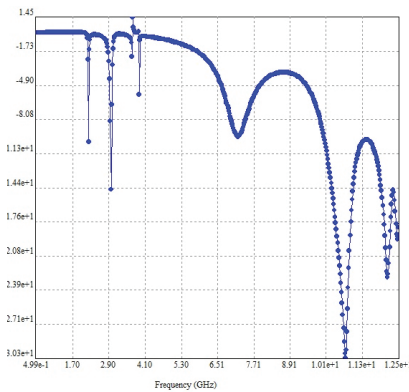## WE GO BEYOND TRADITIONAL MULTIPHYSICS:

- Search-based 3D RF and microwave field solver for diverse range of applications. **NEW**
- Metaheuristic approach for optimizing simulation based electromagnetic designs. **NEW**
- Precise calculation of electrical parameters using our proprietary **Boundary Element Method (BEM) solvers**.
- **Finite Element Method (FEM) in addition to BEM.** This hybrid approach uses the strength of each method while designing an electromagnetic system.
- 3D time domain solver for a diverse range of applications
- **Smart mesh generator code**
- Results in **time domain** as well as **frequency domain**
- Built-in API, Parametric and/or Scripting capabilities

The **INTEGRATED API** enables the direct control of program functions by utility scripts or macros created in tools such as EXCEL or Visual Studio. Scripting can control the entire process of model creation and testing.

- Electrostatic/Quasistatic/Transient 3D field solvers for a diverse range of applications.
- Direct import of models from CAD partners including: Autodesk, PTC, Solid Edge and SolidWorks.

MORE BENEFITS:

- Easy-to-use and intuitive interface.
- High resolution 3D graphic representations that can show enhanced tracing of points on model.
- Automatic meshing and removal of intersecting geometries.
- World class support team ready to unlock your ideas.

Hybrid Simulation Tools for Electromagnetic, Thermal & Structural Design Analysis

SOFTWARE THAT LIVES UP TO THE POWER OF YOUR IDEAS

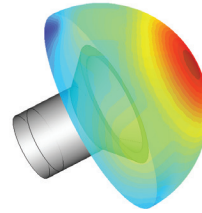MATLAB
Enabled

MathWorks Partner

CHRONOS provides fast, accurate results, exact modeling of boundaries and easy analysis of open region problems. **CHRONOS** delivers a powerful, easy-to-use design and analysis tool right to your desktop.

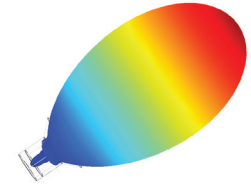*Visualization of the field distribution on a house.*

CREATE YOUR MODEL

GET THE RESULTS

Conical horn; assign sources and boundaries

Near zone electric field on a hemispherical surface

Far zone 3D pattern of electric field

Metamaterial antenna and its S_{11} (dB)

CHRONOS' ADVANCED TECHNICAL FEATURES

- Smart, transparent mesh generator to improve the accuracy of the solution

- Adaptive mesh refinements: The program generates the mesh once and can identify different materials in the computational domain. It will refine and regenerate the mesh automatically to fit the new structure- while maintaining the accuracy

- Solution for broadband or ultra-wide-band problems from a single execution of the problem using a short pulse

- Special treatments to provide highly accurate field calculations

- Solution for finite and infinite structures

- Different types of boundary and absorbing boundary conditions

- Post-processing of Z, Y, and S parameters for electric field and lumped voltage sources between different antennas and microwave networks

- A wide range of E, H field, voltage, and current outputs

- Calculation of input impedance, admittance, scattering parameters and Smith charts of s-parameter

- Calculation of gain, directivity and radiation pattern of antennas

- Assigning model lumped resistances, inductances, capacitances and infinitesimal delta voltage sources along any arbitrary inclined direction

- High quality graphics and text utility for preparation of reports and presentations

- Option of custom software modification – for customers with particular needs

PUT OUR SOFTWARE TO THE TEST

Send us your model, whatever the level of complexity. **We will show you how to get results from your exact design** – no packaged demos.

Contact us for free 30 day evaluation and start improving productivity today. A live demo is also available.

INTEGRATED
ENGINEERING SOFTWARE

COMPLETE SOLUTIONS FOR ENGINEERING AND SCIENTIFIC DESIGN