

# The Attila® Software Suite

Productivity enhancing solutions for radiation transport simulations

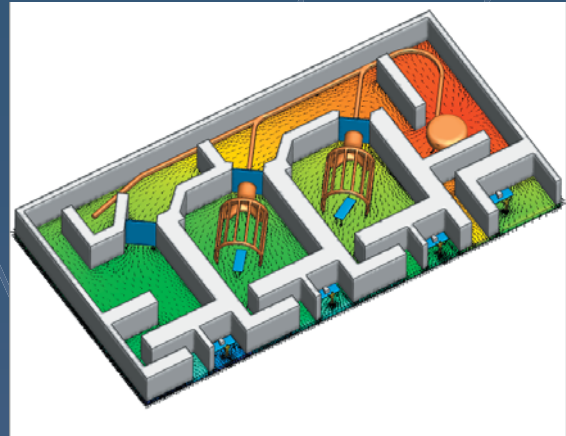
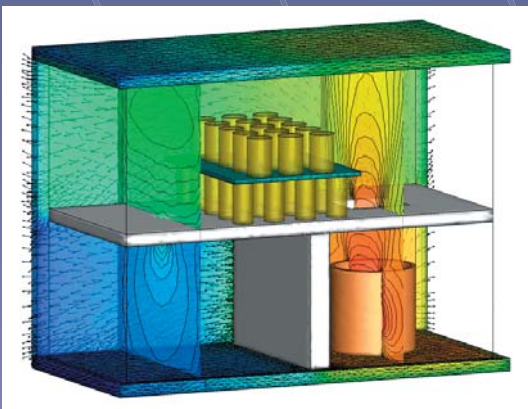
Design with Attila and verify with MCNP\*, all through one graphical user interface (GUI).

### Key features

- > Direct CAD integration
- > Automated, efficient variance reduction for MCNP
- > User-friendly GUI
- > Fast and accurate deterministic solver

### Attila4MC™ Software

Attila4MC improves analysis productivity by providing MCNP users with CAD integration, automated variance reduction, and a user-friendly interface. Through the intuitive Attila4MC GUI, analysts can now import geometry directly from CAD and leverage MCNP's new unstructured mesh functionality. Attila4MC's state-of-the-art deterministic solver automatically generates optimized weight windows with a minimal amount of user interaction, bypassing inefficient time-intensive manual variance reduction. Through Attila4MC's GUI, most MCNP calculations can be set up entirely without editing an input deck, simplifying analysis and verification. SpaceClaim® is offered as an integrated option with Attila4MC, providing users with the full power of direct CAD modeling at their fingertips. With SpaceClaim, analysts can create, import, manipulate, and repair complex geometry in ways previously only possible by full-time dedicated CAD experts.



### Attila Software

Attila is a state-of-the-art software system providing fast and accurate solutions to demanding radiation transport applications. Attila leverages an advanced deterministic Boltzmann Transport Equation solver with an intuitive GUI and CAD integration, enabling users to rapidly and reliably perform complex calculations.

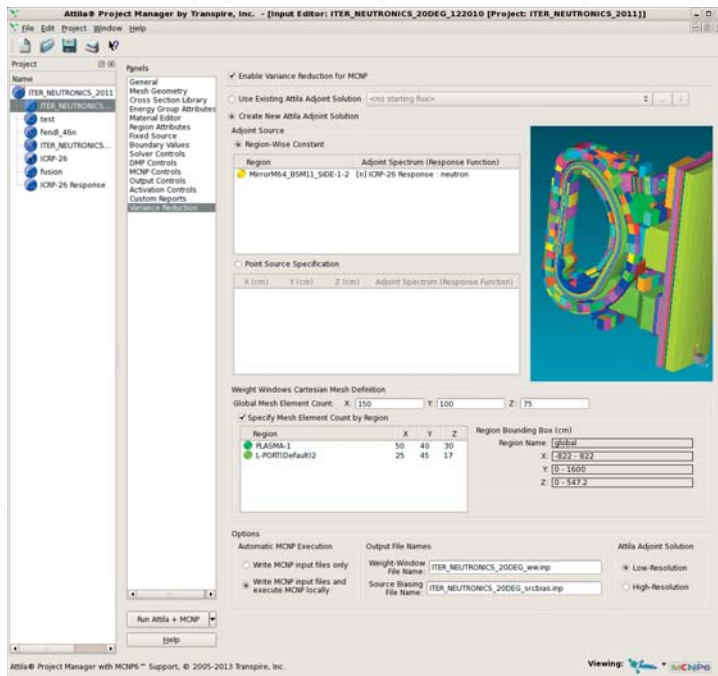
Attila is ideally suited for applications dominated by large attenuations, such as radiation shielding. Attila calculates the solution everywhere, not just at predefined tally locations. By providing both visual and quantitative output options, Attila provides analysts with insightful data needed for informed design decisions.

For design verification, Attila includes the full functionality of Attila4MC. With Attila, users can now easily obtain solutions from two independent first principle solvers, Attila and MCNP, with the effort of only one. Attila is ideal for design, providing the full solution space for users to identify the location of critical areas and hot spots. MCNP is ideal for verification, providing an independent stochastic check of the deterministic Attila solution.

\*MCNP is a trademark of Los Alamos National Security, LLC.

## Attila4MC features

- CAD integration for MCNP's unstructured mesh capability
- Direct CAD modeling with SpaceClaim, including geometry creation, repair, and manipulation
- CAD import from SolidWorks®, Pro/ENGINEER®, Inventor®, CATIA®, Parasolid®, ACIS®, STL, STEP, IGES, etc.\*\*
- Automated body-fitted mesh generation, including curvature-based refinement
- Full GUI support of commonly used MCNP features, including the specification of materials, material-to-region assignments, sources, tallies, etc.
- Legacy MCNP material library import
- Features for analysis verification, including region-specific volume output of computational model for CAD traceability
- Heavily commented, easy-to-read MCNP input deck output
- Automated adjoint based variance reduction through the state-of-the-art deterministic Attila solver
- Weight windows with consistent source biasing<sup>1</sup>
- Forward weighted biasing for efficient global solutions<sup>2</sup>.



<sup>1</sup> J Wagner, A Haghigat, "Automated Variance Reduction of Monte Carlo Shielding Calculations Using the Discrete Ordinates Adjoint Function", Nuclear Science and Technology, Vol 128(2), Feb 1998.

<sup>2</sup> D Peplow, T Evans, J Wagner, "Simultaneous Optimization of Tallies in Difficult Shielding Problems", Nuclear Technology, Vol 168(3), Dec 2009.

\*\* Parasolid and ACIS import available without SpaceClaim option

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## More Information

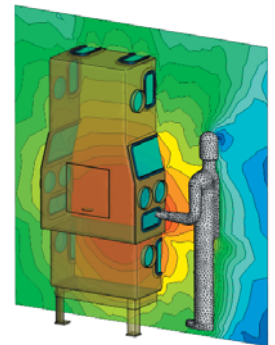
As the world's largest independent supplier of medical X-ray components, we have extensive experience providing high-quality, safe, and effective products.

For more information, please contact a Varex Imaging sales representative at [ndt.cs@vareximaging.com](mailto:ndt.cs@vareximaging.com) or [security.cs@vareximaging.com](mailto:security.cs@vareximaging.com).



## Attila features

- Full capabilities of Attila4MC, including CAD integration and GUI support
- Robust and convergent deterministic solver
- Highly efficient through large attenuations
- Solution field calculated everywhere
- Comprehensive options for quantitative post processing
- Integrated visual post processing
- Distributed memory parallel upgrade option for near linear scaling across many processors
- GUI-driven activation option for computing shut-down dose rates



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