

# RadChek™

## 3D Radiation Design and Shielding Analysis



### Features and Benefits

- Bridges CAD and radiation transport geometries
- Eliminates manual translation, which saves time for complex assemblies
- Accomplishes in minutes or hours what an experienced engineer takes days or weeks to do manually
- Easy and quick import of CAD models
- Enables a broader set of radiation-hardened product design configurations, rather than resorting to more shielding
- Reduces protective shielding weight normally necessary to ensure that hardware survives space-radiation damage
- Enables substantial cost savings in production of radiation transport geometry models, along with attendant benefits in the complexity and accuracy of these models
- Provides accurate environmental assessments, enabling lighter and less expensive designs
- Shrinks design margin needed for uncertainties in the space environment

### General Description

Ridgetop Group's RadChek is a 3D software tool that supports the design and analysis of shielding for assemblies that are exposed to space radiation. Proper shielding is essential for maintaining the reliability of radiation-sensitive devices.

RadChek was developed for radiation engineers who need a user-friendly interface that can:

- Create a radiation 3D model of the system
- Calculate the received doses
- Perform optimum shielding analysis

The RadChek software offers the following main features:

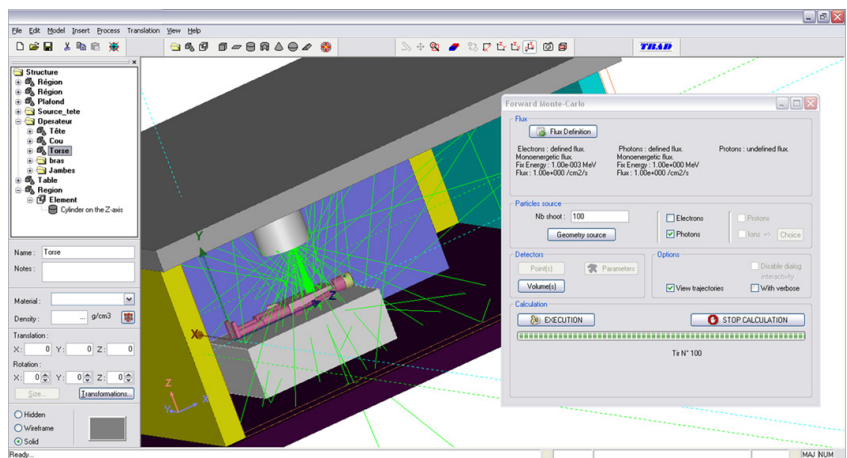
**Calculation engines** – 3D ray tracing; forward and reverse Monte Carlo

**Post-processing** – ray view; shielding mapping; six faces equivalent thickness

**Data exchange** – IGES and STEP import

**Computer-aided design (CAD) interface** – remodeling; CAD toolkit; user-friendly database interface

**NOVICE and GEANT4** interoperability



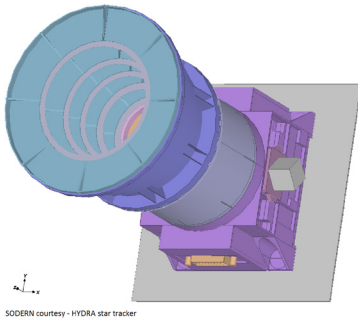
RadChek main graphical user interface

RadChek is the only radiation engineering solution that:

- Saves mass by optimizing the shielding design
- Saves time by directly using CAD models

## Electron Environment During a Jovian Mission

The energy of the trapped electrons around Jupiter can reach up to 1 GeV. This is a particular concern for sensitive external units such as Star Trackers. A study was conducted using the RadChek Reverse Monte Carlo tool to assess the transmitted electron flux in critical parts of the unit, such as the CCD camera and the lenses along the optical path.

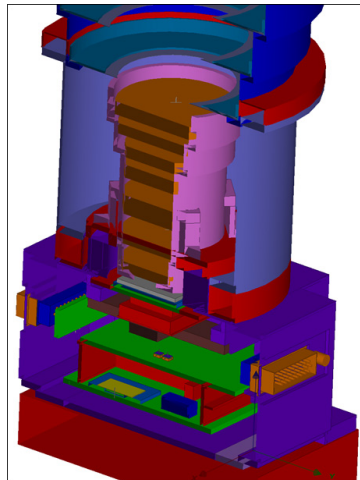


*Star Tracker designed for a Jovian mission. The unit is located outside the spacecraft represented by a baseplate.*

SODERN courtesy - HYDRA star tracker

*Analyses were carried out at the optical path level, from the outermost lens to the CCD detector.*

*(Images courtesy SODERN - HYDRA Star Tracker)*



Rad-Hard by Design	Rad-Hard by Shielding	Rad-Hard by Process
InstaCell™ Libraries of Mixed-Signal IP Cores	RadChek™ Radiation Transport Analysis Tool	Ridgetop Design Services Using SOI & SiGe Foundries
CMOS SiGe		Accredited 1A Trusted Supplier by DoD

*Ridgetop's comprehensive suite of radiation hardening tools*

### Why RadChek?

RadChek represents tremendous savings in time and money by providing time-efficient, high fidelity models, and reducing the need for manual generation of models.

RadChek allows designers to use lighter, cost-effective designs with more accessible parts, which provides a better value overall.

For more information about RadChek visit:

<http://www.RidgetopGroup.com/products/semiconductor/RadChek.php>

### About Ridgetop

Ridgetop Group Inc. is a leader in providing advanced electronic solutions for critical applications. Ridgetop was founded in 2000 with the purpose of introducing revolutionary tools to improve performance of mission-critical electronic systems.

With a strong management team and world-class technical staff, Ridgetop has established a stellar reputation serving its government and commercial customers with effective and practical "best of class" solutions.

**Need modified or custom design? Contact Ridgetop at +1 520-742-3300 to discuss your ideal solution!**

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