FASTRAD® V4.2

3D modeling software for radiation shielding analysis

Advanced Radiation Analysis Calculation Tool For Space Applications

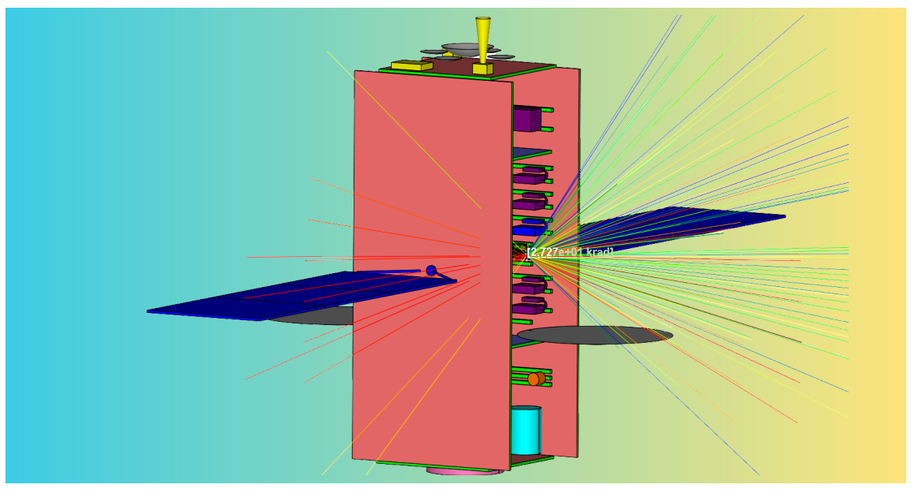
- **3D Model Import & Design**
  Easy .Step file import

- Particle transport with Forward and Reverse Monte Carlo methods

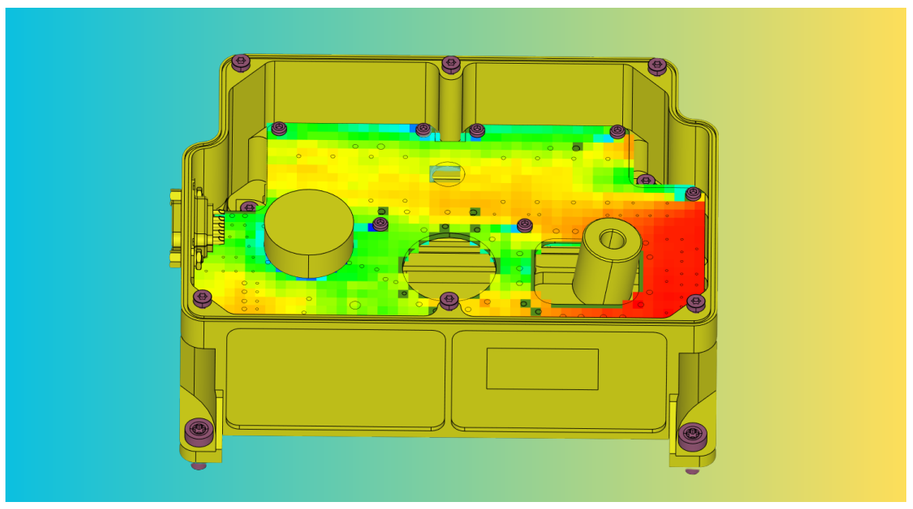
- Sector analysis module **for radiation dose calculation/Six faces equivalent thickness tool**

- **Internal charging analysis (option)**
  - 3D time-dependent **electric field**
  - Charge deposition rate by primaries and secondaries
  - Charging of **floating conductors**
  - Incident current density
  - Net electron current density between two points

- Integration of a **scripting module** for interacting with the main FASTRAD® entities

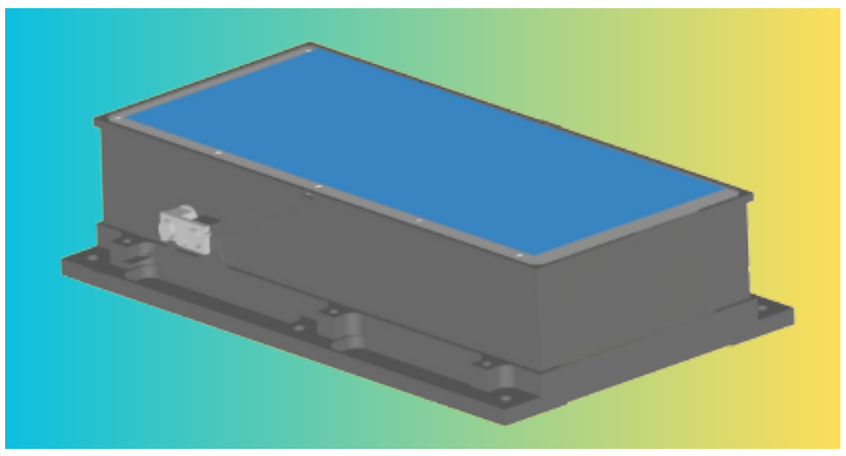


Graphical user interface



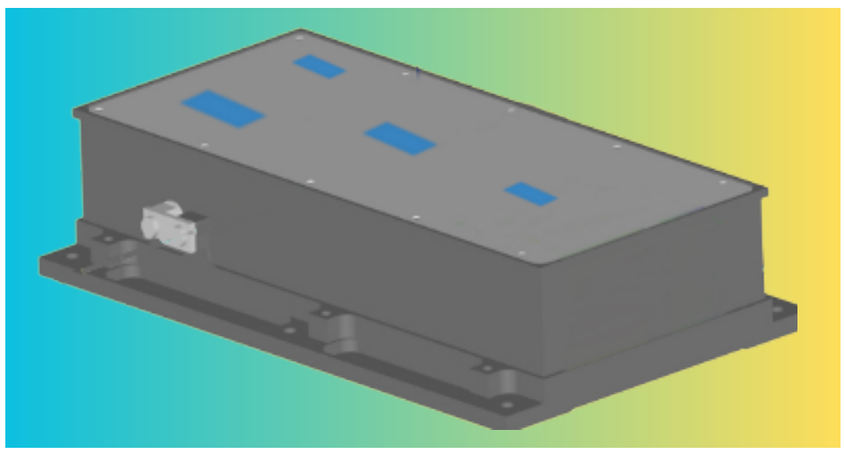
Dose mapping with Ray-tracing calculation

WITHOUT FASTRAD®



Uniform & unrefined shielding
Total mass of 360g

WITH FASTRAD®



Spot shielding on critical parts
Total mass of 12g

YOUR BENEFITS

- **Cost reduction by:**
  - Decreasing overall shielding mass
  - Improving radiation sensitive equipment reliability
- Great time saving tool for 3D modeling
- Precision of Monte Carlo method
- Powerful decision-support tool
- User-friendly & customized interface, easy handling

SAVE TIME ON YOUR PROJECTS!

Leading radiation software for more than 20 years!
Used daily by 150+ clients worldwide

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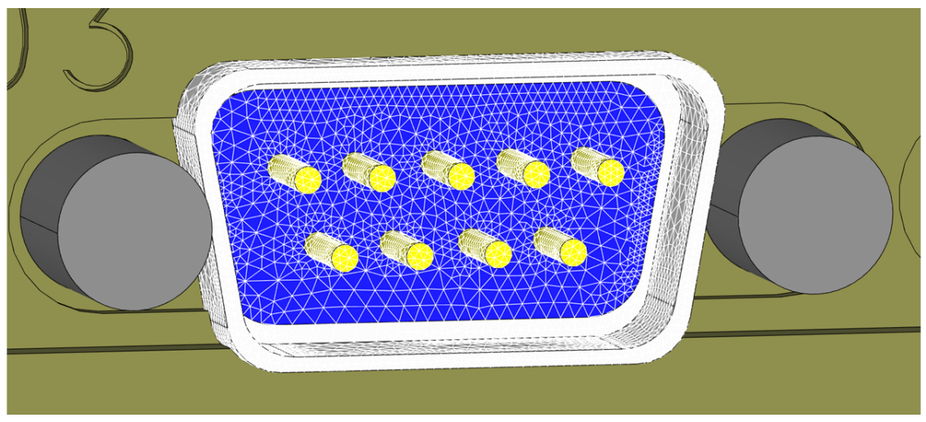
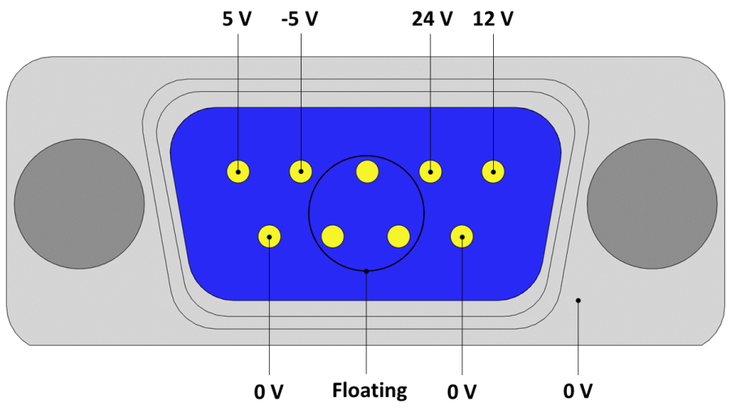
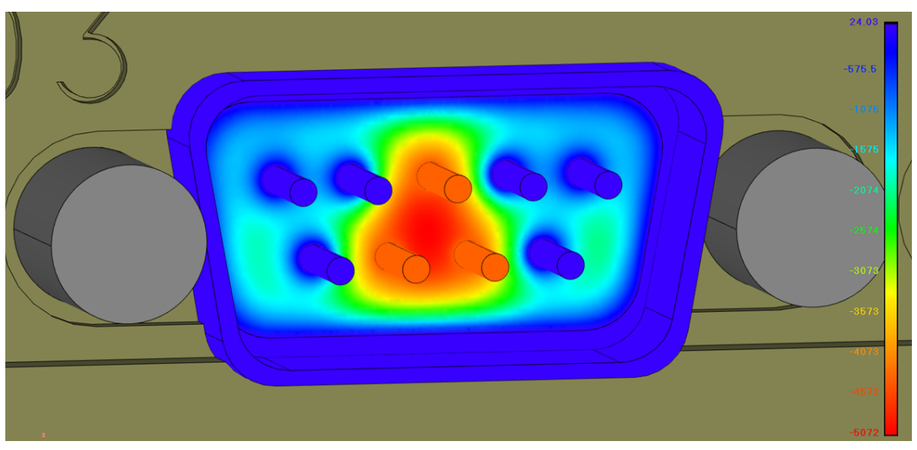
Internal Charging Analysis - 3D Time-Dependent Electric Field (option)

- ESD risk assessment though 3D and time-dependent **mapping**
- Mesh tool: create, display and refine a tetrahedral volume mesh



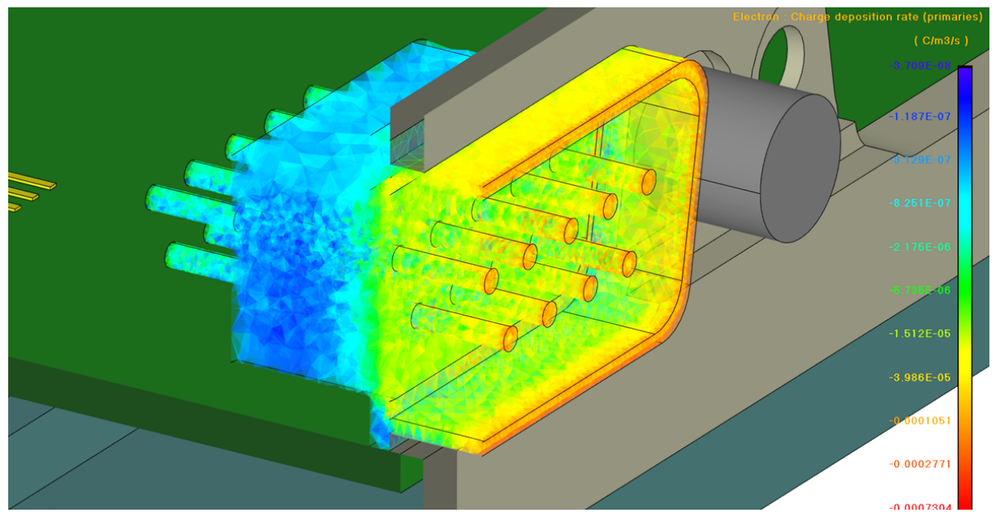
Tetrahedral mesh





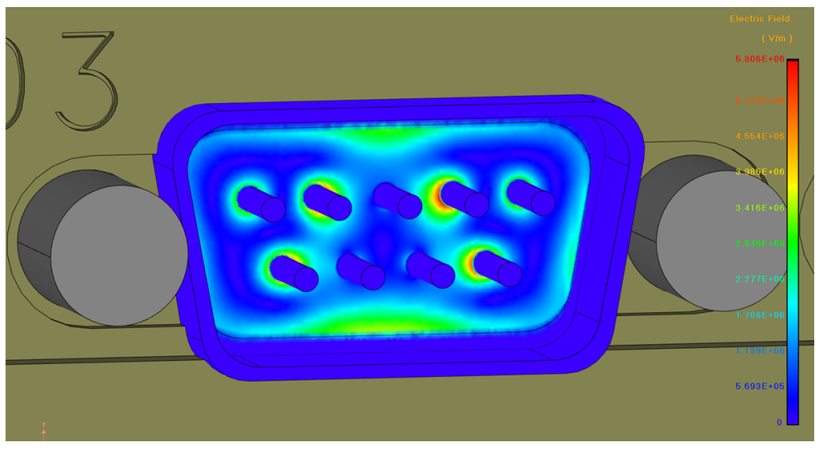
Potential

- The charge deposition rate calculated by a Reverse or Forward Monte Carlo particle transport is the source term for the calculation of the electric field



Charge deposition rate

- Boundary conditions: assign potential on the different elements
- Several conductivity models are available: radiation-induced conductivity, temperature and electric field dependent conductivity, constant conductivity, user defined electric field-induced conductivity



Electric field

YOUR BENEFITS

- Reduce margins by computing the 3D electric field
- Single intuitive tool for all radiation analysis
- No additional modeling effort: use the same geometry model as the dose analysis
- Use real geometry with Reverse Monte Carlo and tetrahedral mesh
- Geometry/shielding/design optimization to limit ESD risk
- Time and money saved on space projects

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