Shielding Studio

The Future of Computer Simulation in Radiation Protection

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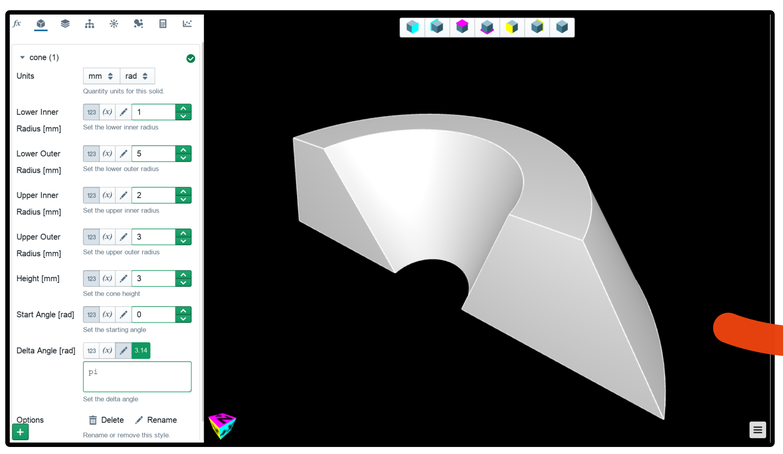
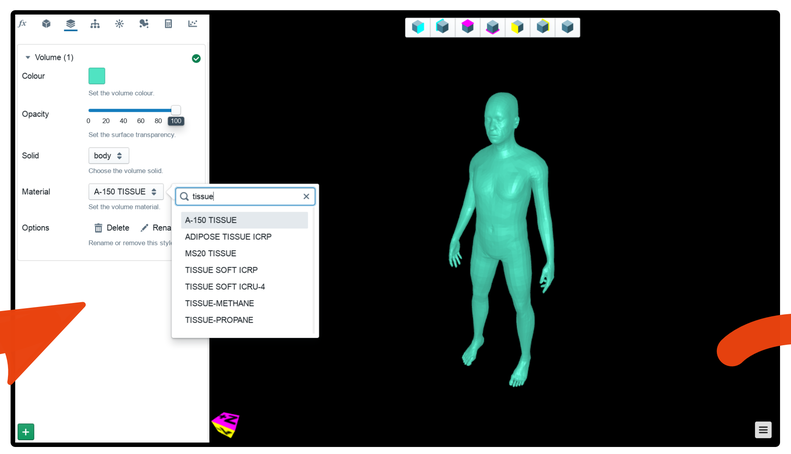
Radiation protection will rely heavily upon **computer simulation** for the evaluation of new and complex exposure scenarios in the future. In particular, it will find increasing application in: the design and verification of **new facilities and plant** where shielding needs to be optimised; in the reconstruction of radiation incidents; and in **radiation worker training**.

To date, and in broad terms, the primary focus of **computer simulation in radiation protection** has focused on either the macroscopic anatomy of the human in the exposure scenario so as to determine tissue weighting factors, or the microscopic interaction of various radiation qualities impinging on biological cells, as in microdosimetry. Less emphasis has been applied to the development of technology for the specification of the surrounding **macroscopic environmental geometry** and sources that make up a particular exposure scenario.

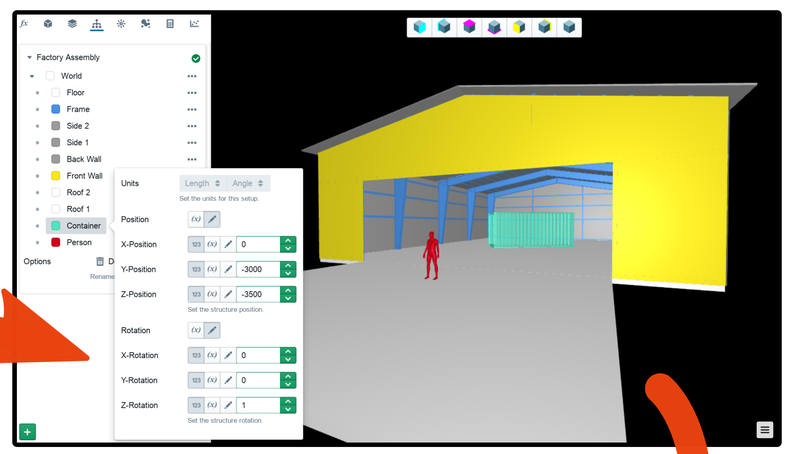
- ✔ **Ambient equivalent and effective doses.**
- ✔ **H*(10) and AP/PA/LAT/ISO aspects.**
- ✔ **Simulate with your CAD geometry.**
- ✔ **Use elemental and compound materials.**
- ✔ **View dose/geometry overlays in 3D.**
- ✔ **Export raw data in plain text format.**
- ✔ **Specify particle and ion sources.**
- ✔ **Simulate primaries only or secondaries.**
- ✔ **Plot and analyse simulations results.**



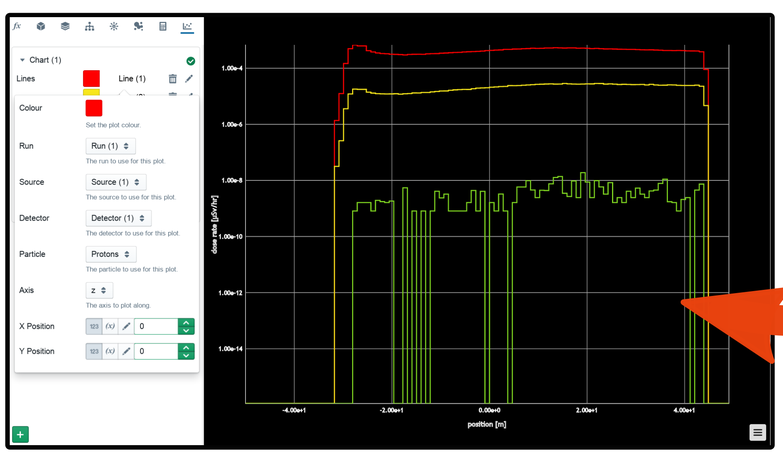
Shapes



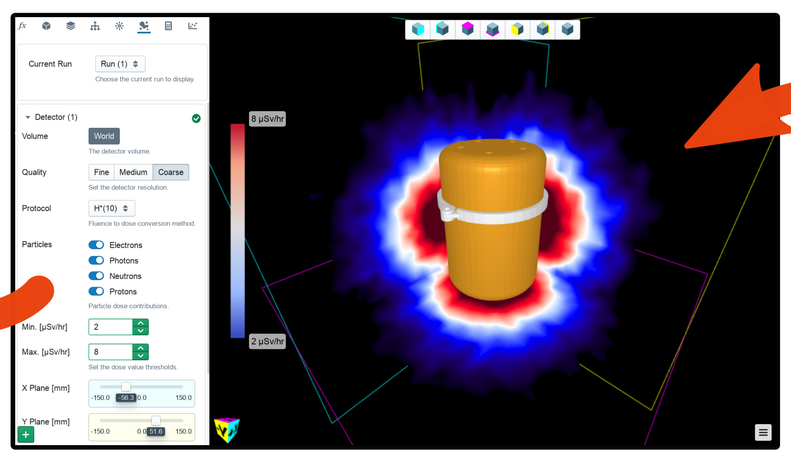
Properties



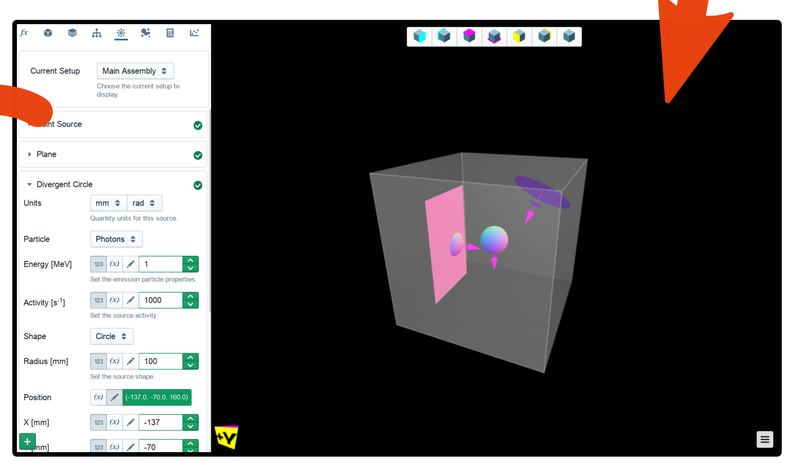
Assembly



Analysis



Detectors



Sources

Message Chris for a demonstration!

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Shielding Studio uses the Monte Carlo method for radiation transport in the calculation of particle energy fluence and radiological dose in typical and **complex radiation protection scenarios**. Geometry is specified directly using combinations of 3D shapes and forms, and triangular meshes derived from **CAD models**. Using published data for various exposure directions around a human and for various qualities, the calculated fluence at points throughout the simulation geometry is converted to **equivalent or effective dose**.

I have evaluated radiation shielding for industrial gauges used in ore processing, implemented automated systems for radiotherapy patient quality assurance, and simulated a whole lot of radiation. Now I am developing and selling software for radiation shielding calculation on land and in outer space, for advanced medical technologies using radiation, and radiation protection!

Christopher Poole, PhD - Founder, Director
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Radiation Analytics

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