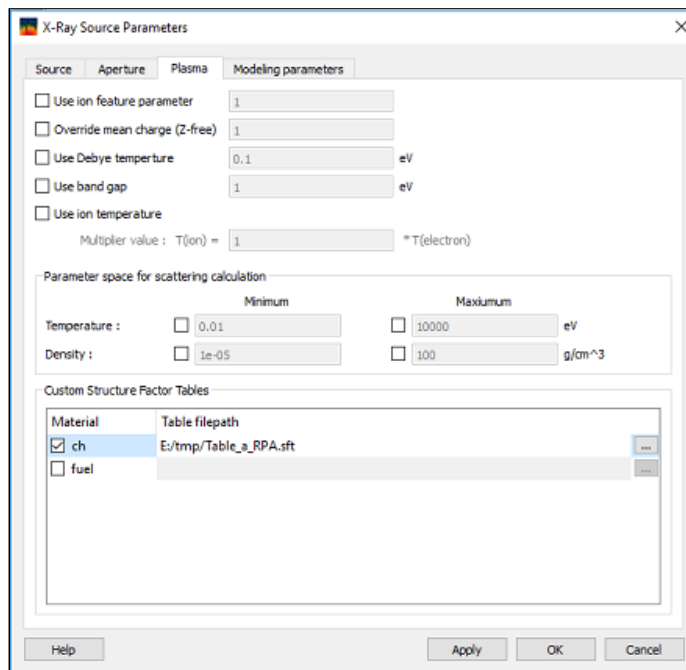


## Revision History

### Version 15.5.0

#### SPECT3D:

- Implemented custom tables for x-ray scattering structure factors. Tables are specified per material, in the *Plasma* tab of the *X-Ray Source Parameters* widget (under *Backlighter*):



- Implemented version 7.1 of G. Gregori's x-ray Thompson scattering code. Tritium is now supported.
- Increased precision for level energy output in population output files.
- Occupation probabilities are written to population files.
- Mixing algorithm for  $\langle Z \rangle$  is changed for calculations in which some volume elements have more than one material represented by non-dca opacity tables. In those cases,  $\langle Z \rangle$  for each individual material in the mixture is looked up using Ni for the mixture, not the component (previous versions). Then, free electrons for all components are added together.
- Implemented support for OPLIB opacity tables, available in the *Materials* widget. **This feature is in beta stage and is not available to all users.**
- Bug fixes:
  - Fixed appearance of spurious error message which appears when (for a time-dependent *SPECT3D* simulation) there is more than one hydro time before the first *SPECT3D* simulation time. The warning said "Time-dependent collisional-radiative simulations are not supported for grids with time-dependent connectivity." Even though it said this, *SPECT3D* did *not* actually proceed as though the connectivity were time-dependent, and results were still correct.
  - Dense plasma shifts for some ions could be erroneously ignored.

- Fixed problem preventing multi-threading over detector pixels when user initially sets a material to be a DCA material, specifies the elements, then later sets the material to be non-DCA material.
- Added checks for rare extraneous line-of-sight wall intersections near corners for isolated quad-torus volume elements (2D RZ geometry).
- For hot electron distributions, the first energy bin is no longer erroneously excluded. This may affect simulations with a small number of hot electron energy bins, but should be negligible for simulations with analytic hot electron energy distributions.

## SpectraPLOT:

- Drilldown window titles now contain name of filtered image on which they are based.
- Line plots which have only one point (*e.g.*, flux vs. time plot with just one time) are shown with one symbol.
- A list of recently opened *SpectraPLOT* workspaces has been added to the *File* menu.
- Right click menu has been simplified.
- View dataset has been added to right click menu.
- Axis properties menu has been revised and simplified.
- Four new buttons ( Ln/Ln, Ln/Lg, Lg/Ln, Lg/Lg ) have been added to toolbar to toggle between plot scalings.
- Bug fixes:
  - For cases utilizing symmetry for the image plane of *Rectangle* detectors (*i.e.*, the *Portion to Compute* in the *SPECT3D* run is not the whole image), the pixel positions in the plotted images are now adjusted appropriately so that the center of the images is at 0,0.
  - Drilldown has been updated to handle cases with multiple *SPECT3D* runs and multiple detectors.
  - When generating a new plot window, and no *SPECT3D* run is selected in the *SPECT3D Run Results* list, the first item in the list is selected if available. (Previously, a warning was shown indicating a new plot could not be set up.)
  - The *Help | Manual* menu item now shows the *SpectraPLOT* contents page.
  - Lineplot and contour plot properties are now correctly saved to workspaces.
  - Smooth shading is now working for streaked spectra plots.
  - The legend controller now updates properly when plots are added or removed from legend.
  - Dragging and dropping line plots now correctly updates plot legend.