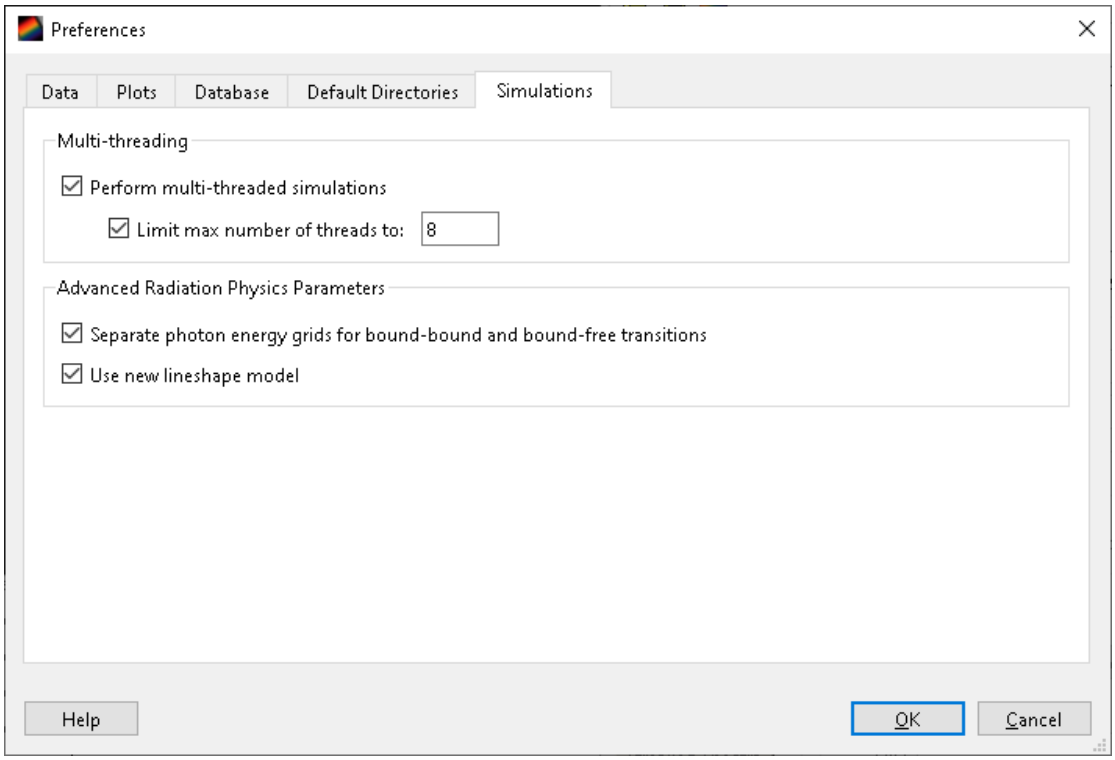
Revisions for HELIOS 9.0.0

- This version of *HELIOS* is built with a new version of Qt - a cross-platform framework for creating user interfaces and graphics. This is a major upgrade to the long-term support version of Qt 6.2.6. It was required to ensure stable operation of Prism software on the most recent Windows, Mac, and Linux operating systems.
- Added option to perform CR calculations with NLTE EOS. This feature is based on the formalism described in: H.A. Scott, "Collisional-Radiative Modeling for Radiation Hydrodynamics Codes", Chapter 4 in Modern Methods in "Collisional-Radiative Modeling of Plasmas", Springer Series on Atomic, Optical, and Plasma Physics, Vol 90 (2016). Utilization of the model may increase simulation time by a factor of two. Also, proper atomic models need to be used in order to obtain physically meaningful results. This is a new feature; user feedback will be appreciated.

- For Helios-CR users: New Stark broadening models were implemented based on the semi-empirical approach detailed in Gu and Beirsdorfer (Phys. Rev. A, 101, 032501). Users can control whether to use the old or the new Stark broadening model in preferences for each application. The default option is to use the new model. For more information on the models please refer to an appendix in the documentation titled "Stark Broadening Models in Prism Codes".



- Bug fixes:
  - For CR zones, *Ionization Fractions* were sometimes not written correctly to the Exodus file when more than one material was used.
  - For non-CR zones, *Ionization Fractions* were sometimes not written correctly to the Exodus file when three or more materials were used.
  - Apply floor for temperature derivative of pressures that is consistent with existing floor for temperature derivatives of specific energies.
  - Fix for potential issues with simulations that use SESAME tables with different temperature/density grids for ions (303 table) and electrons (304 table)
  - In some calculations that resulted in frequent updates of the graphical progress monitor, there was a potential for increased simulation time. Algorithms for limiting graphical output were implemented to address this issue.

- *HydroPLOT*:
  - *HydroPLOT* has also been updated to use Qt 6.2.6.

    - Reading in *HydroPLOT* workspaces previously saved using *HydroPLOT* versions 8.0.0 and earlier is not supported. If utilizing those workspaces is necessary, it is recommended that the relevant earlier version of *HydroPLOT* be used.
    - Bug fixes:
        - Plotting "Ionization Fractions" (and "Kinetic Energy per Ion" for CR zones) has been fixed.
        - Applying spectral resolution is now supported for *HELIOS* exo-formatted output files.
        - If one or more materials had DCA selected, but CR conditions were never reached, *Ionization Fraction* plots would not appear. This has been fixed.
- *EOS and Opacity Viewer*
    - *EOS and Opacity Viewer* has also been updated to use Qt 6.2.6.