



HELIOS USER'S GUIDE

Revisions for HELIOS 8.0.0

- After a Helios simulation is completed, the output file that is opened by default in Hydroplot is now *.exo. Please note that Prism plans to discontinue supporting *.bpf output format.
- Linux users working in a KDE 5 desktop environment will likely experience very slow graphics performance. Use of KDE 5 is discouraged for the time being.
- Implemented support for atomic data generated by FAC in Helios-CR. For more details, see attachment titled "FAC Atomic Data in Prism Codes" in the main documentation.
- Helios-CR will be distributed with a standard set of FAC-generated data. Custom user-generated data are supported as well. The data need to be generated with the latest version of FAC available at GitHub.
- Added support for Big Sur operating system on both Intel- and M1-based computers.
- Updated algorithms and libraries for software activation.
- *HydroPLOT*:
 - Added options to plot electron and ion specific heat.
 - Some plotting problems for calculations which include CR have been fixed. Those problems included:
 - Ionization Fraction plots (Spatial tab) were getting bad data for CR regions
 - Frequency-dependent plots which also depend on space and time (lower-left pane in Frequency tab), e.g. Radiation energy density, Rosseland opacity, Heating rate, Cooling rate, were getting the wrong number of points.
 - Kinetic energy per ion plots were giving slightly incorrect energy values when plotting from Exodus file.
 - "Radiation power in band" (under Fluxes, in Time tab) were missing data from CR regions, and were plotting incorrect values for non-CR regions, when plotting from Exodus file.
 - Some incorrect axis unit labels have been fixed. Those included:
 - Radiation heating rate, Radiation cooling rate, and Net radiation heating rate (Spatial tab, and also in 2D/3D Contour plots) incorrectly included geometry-dependent length unit dependency (e.g. 1/cm for cylindrical geometry).
 - Fluid kinetic energy (Time tab > Regional properties) was missing geometry-dependent length unit dependency (e.g. 1/cm for cylindrical geometry).
 - For BPF files only, "Plasma internal energy" was actually only the ion component (as opposed to the sum of electron and ion internal energies, which the Exodus files correctly display), so the plot name has been changed to "Ion internal energy" for BPF files.
 - Changed units for "Fluid kinetic energy" (Time tab > Regional properties) from MJ to J.
 - Some issues with "Space/time int. fusion yields" plots have been fixed for spatial line plots as well as for 2D contour plots:
 - For Exodus files, the plots are now integral plots over radius (or zone, or mass), i.e., for a given time, each value is the sum of all values leading up to it in radius.
 - For BPF files, correctly weighted yield values are now plotted.
 - For both Exodus and BPF files, the name of these plots incorrectly said integrated "rates", whereas they are really integrated "yields".