Revisions for VISRAD 18.1.0

- NIF Laser System: Support for ARC beams has been added:
  - To add the ARC beams, use the *Lasers | Add NIF ARC Beams* menu item. The four ARC beams B353A/B and B354A/B are added as *Custom* beams to the *Laser Beams List*.
  - The ARC beams have a rectangular shape at the final optics (a turning mirror in the actual NIF system), and a beam profile that, like standard NIF beams, transitions to a supergaussian profile (if used) at the target.
  - If ARC beams are turned on, beams in Quad Q35T cannot be used.
- NIF Laser System: Use of *Custom Laser Beams*:
  - Custom laser beams utilize "blue" beam cones only. This is different that standard NIF beams, which are configured with blue, green, and red cones (*i.e.*, 3ω (0.35 μm), 2ω (0.53 μm), 1ω (1.05 μm) laser light).
  - *VISRAD* no longer allows *Custom* beams and standard NIF beams to be grouped together in a *Laser Beam Cluster*. This is because editing operations are sometimes performed per cluster. If a previously saved workspace had both *Custom* and standard NIF beams contained within the same *Cluster*, the user is notified that a new *Cluster* is created and the *Custom* beams have been moved to that new *Cluster*.
- OMEGA DPPs: The phase plate parameters for OMEGA have been updated. For several DPPs, parameters have been changed back to the values used in VisRad 17.0.0. The updated parameters are as follows:

OMEGA DPP	Type	1/e R-major (μm)	1/e R-minor (μm)	Supergaussian n	SSD/DPR
SG5-650	circular	287	-	5.11	On
SG5	circular	357	-	4.77	On
SG8	circular	438	-	4.5	On
SG8-Flat	circular	438	-	5.8	On
PD-SG2-600	circular	300	-	2.2	On
E-IDI-300	elliptical	144	106	4.3	Off
E-SG4-865	elliptical	430	396	4.7	On
E-SG10-300	elliptical	171	157	2.5	On
100 um (s/n 083)	circular	100	-	2.0	On
100 um (s/n 086)	circular	99	-	2.2	On
200 um (s/n 120)	circular	107	-	2.0	On
200 um (s/n 018)	circular	105	-	2.1	On
500 um (s/n 006)	circular	150	-	1.9	On
500 um (s/n 026)	circular	149	-	1.9	On
700 um (s/n 056)	circular	195	-	1.9	On
700 um (s/n 058)	circular	202	-	1.8	On
LLNL-3w-150-328	circular	75	-	2	On
LLNL-3w-250-024	circular	125	-	2	On
LLNL-3w-250-027	circular	125	-	2	On

- OMEGA Elliptical Phase Plates: The *Rotation Angles* stored for HEX ports H1 - H5 and H16 - H20 have been updated.
- GEKKO Target Chamber:
  - The 4 LFEX beams (H1, H2, H3, H4) were added to Port 52. The beams are square beams (at the position of the final optics).
  - The distance from TCC to the final optics for the driver beams was change to 95.97 cm.
  - The phase plate library was updated to include one standard supergaussian (named GEKKO DPP-1)..
- When exporting laser beam-target intersection points data (*.bti data file), addition information is written for each beam: the beam name, and the beam port polar and azimuthal angles. To allow for backward compatibility for code written to process this data, the format ID was changed from 1 to 2.
- *Set Viewing Parameters* dialog: When setting the viewing position using either the *Diagnostic Ports* selector of the *Laser Beam Ports* selector, the radius ("r") for the *Position of Eyes* is set to the target chamber radius.
- *Custom Laser Beams*:

- When adding a *Custom Laser Beam*, the beam is added to the *Laser Beam Cluster* named "Custom_Beams".
- The upper limit on the f-number was removed.
- Bug fixes:
  - NIF TaLIS Checks: Fixed problem that caused 1ω (red cone) clearance and reflection checks to produce a "Failed" status when *Custom Laser Beams* are included.