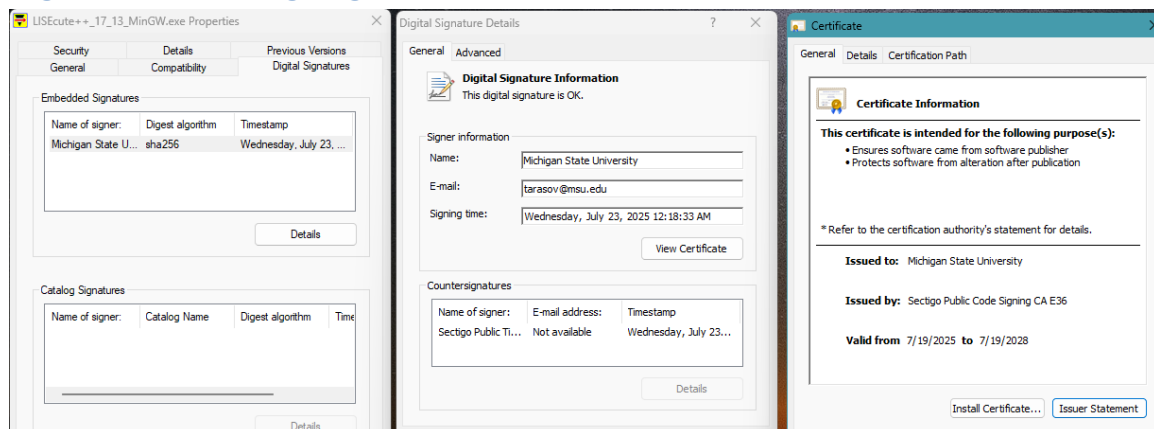


## LISE++ Versions 17.13.1 – 17.14 Summary of Changes

This period (April–August 2025) included numerous stability, usability, and performance updates. The main user-visible improvements are summarized as follows:

- Beam Dump dialog improvements: added 'Lock BD settings', corrected parameters saving, and new statistical treatment of X1/X2 averages and sigmas (median-asymmetric solution).
- 3D visualization improvements: updated 3D-envelope and graph panels.
- Integration with Excel restored and stabilized after Microsoft update (v.2504+); new versions of lise64.xlsm and LISE\_excel64.dll released.
- Dark mode support added and fine-tuned in Preferences and dialogs.
- Digital signing of executables, DLLs, Excel macros, and installer package using Michigan State University – Sectigo certificate with YubiKey.
- New Actual Installer v10.3 adopted for package builds to support Windows 11 and signing.
- Setup dialog enhancements: multi-row drag-and-drop, multi-row erase, and new satellite options.
- New flags and defaults: updated dBE settings, flagWriteReadingFile to fix slow file load, adaptation of wedge d/d values in reverse configurations.
- General UI corrections: icons, logos (DOE, CEA, CNRS), wedge color in shifted/disabled mode, and improved cancel dialogs in dark mode.

### Digital certificate signing information



## Beam Dump dialog with 'Lock BD settings'

ARIS Beam Dump

$^{238}\text{U}$  (177.0 MeV/u) + C  $\rightarrow$   $^{238}\text{U}$ : Energy=142.0 MeV/u, I=16.04 kW; Bp = 5.0366 Tm

Charge State information

	Z-q=0	Z-q=1	Z-q=2	Z-q=3	Z-q=4	Z-q=5
Winger et al. [%]	0...	3.17	49.2	41.8	5.63	0.213
Leon et al. [%]	2.47	15.9	37.6	32.5	10.3	1.19
"GLOBAL" [%]	0.537	12.4	72.8	13.2	1.01	0...
Power [kW]	0...	1.99	11.7	2.12	0.162	0...
dBp / Bp [%]	-8.60	-7.59	-6.57	-5.52	-4.44	-3.34
<X <sub>2</sub> > [mm]						
$\sigma(X_2)$ [mm]						
$\sigma(Y_2)$ [mm]						
In Straight plane [%]						

6 Degree BD settings

Beam Dump: Beam\_Dump

☒ use previous block in MC analysis

BD Angle: 6.000 deg

Longitudinal Distance: 0.000 mm

Dump Transverse: 8.340 mm

Dump Longitudinal: 79.350 mm

Distance "A": 93.110 mm

Distance "B": 251.860 mm

Straight Downstream: 172.460 mm

Straight Longitudinal Upstream: 172.510 mm

Straight Downstream: 173.410 mm

Straight Plane Upstream: 173.460 mm

Run settings

Bp set [Tm]: 5.0366

Number of Rays: 1000

Minimum power to show charge state [kW]: 1.000e-05

MC block\*: BTS01B

This is the final block used in Monte Carlo calculations to obtain charge states phase space. This location corresponds to the exit of the first preseparator dipole.

Beam Dump tune

BD Center: 125.000 mm

BD Width: 177.800 mm

BD Bottom: 36.100 mm

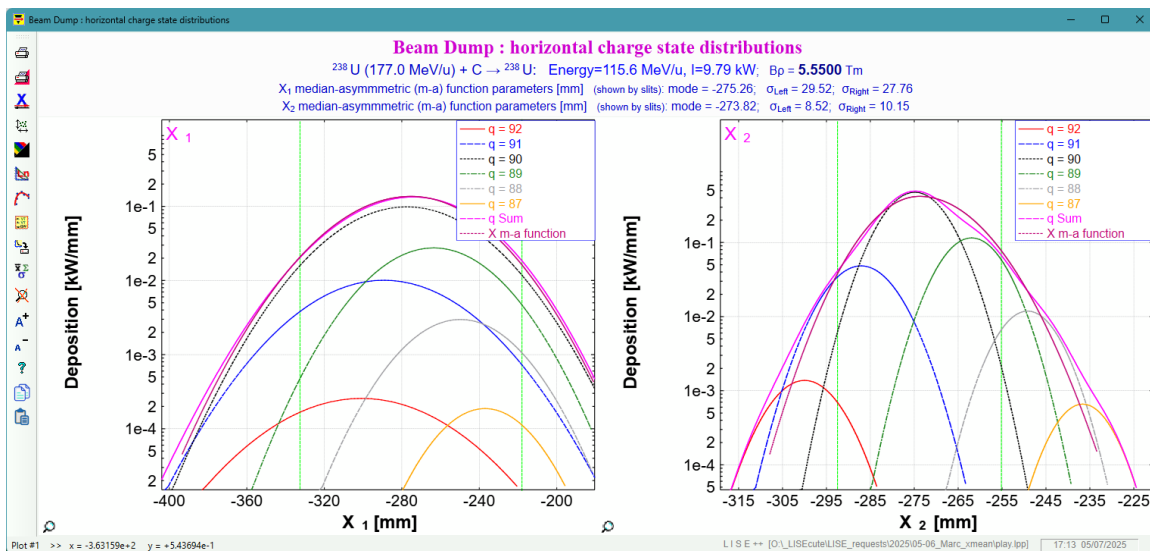
BD Top: 213.900 mm

Execute

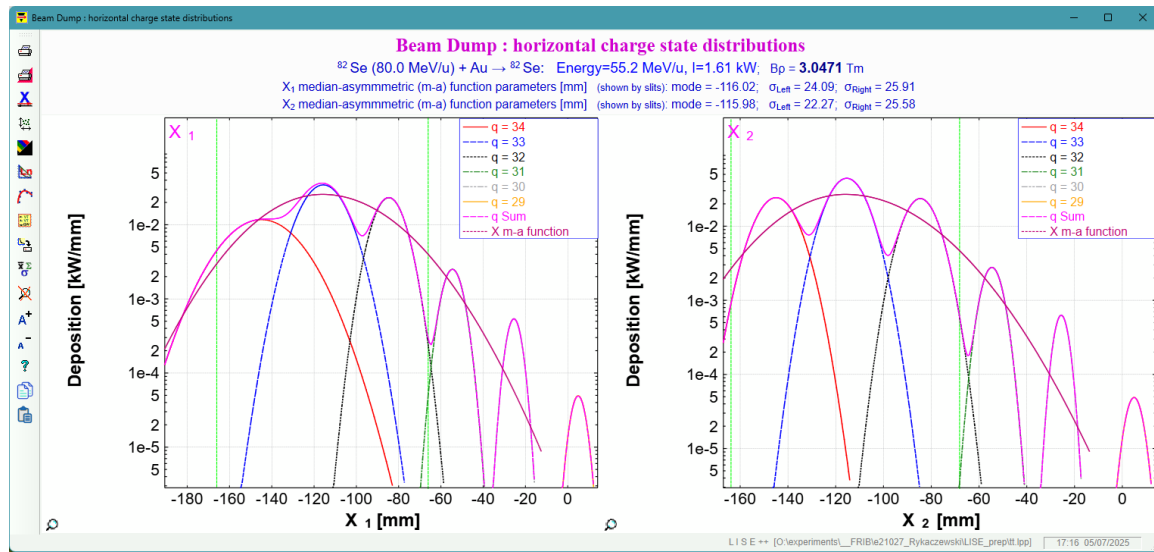
☒ Lock BD settings

☐ Make Default

## Beam Dump charge state distributions (example 1)



## Beam Dump charge state distributions (example 2)

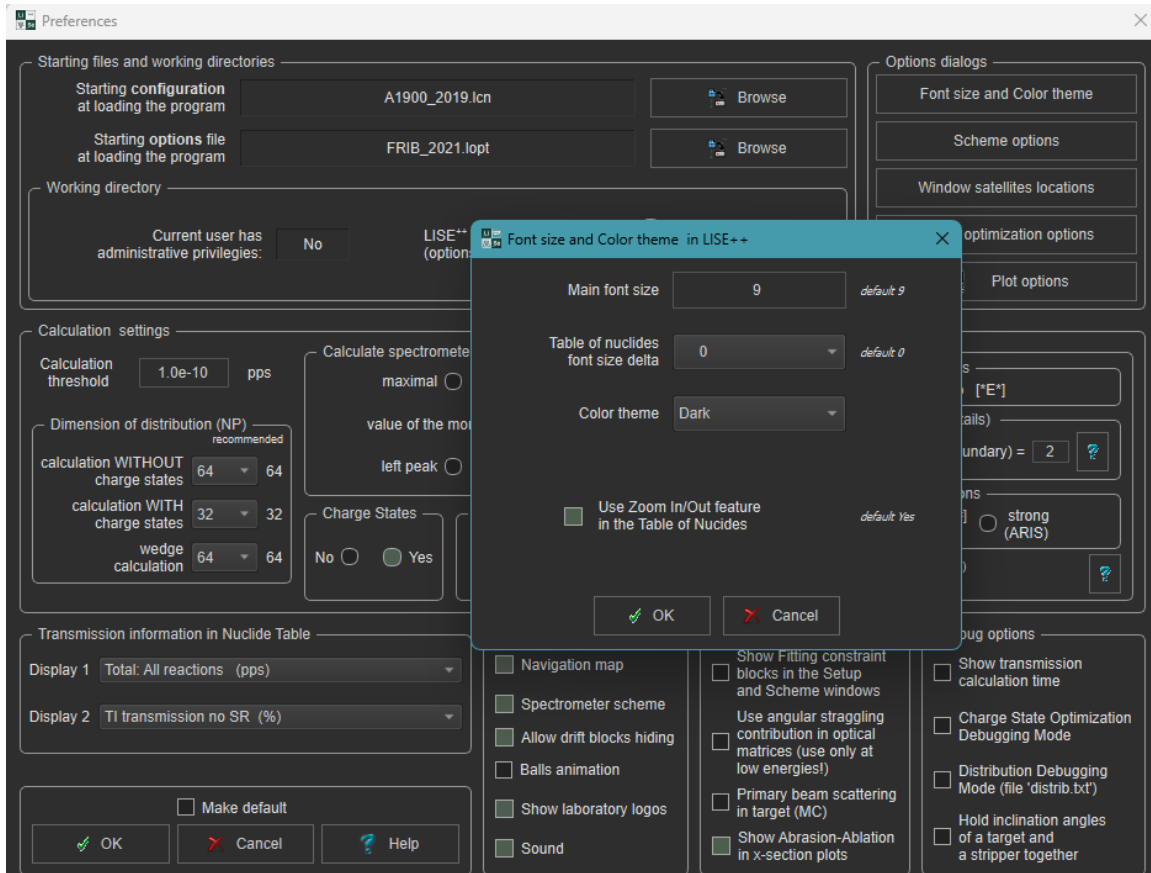


## Beam Dump statistics output

*For all charge states*

Value	Median	$\sigma_{\text{Left}}$	$\sigma_{\text{Right}}$
dBp / Bp	-23.90	2.01	2.04
$A_0$	-165.46	5.01	6.12
$L_1$	-2.22	150.72	151.00
$P_1$	-2.24	151.55	151.84
$X_0$	-273.82	8.42	10.04
$X_1$	-272.73	29.05	27.43
$X_2$	-273.82	8.42	10.04
$Y_1$	0.20	15.85	15.86
$Y_2$	0.84	15.76	15.79

## Dark mode Preferences dialog



## Dark mode Beam Dump dialog

