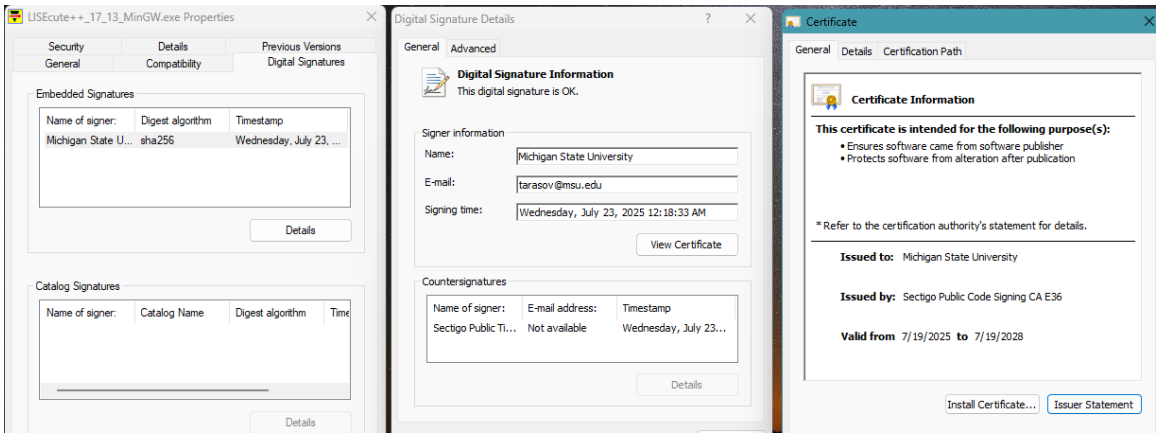
## LISE++ Versions 17.13.1 – 17.14 Summary of Changes

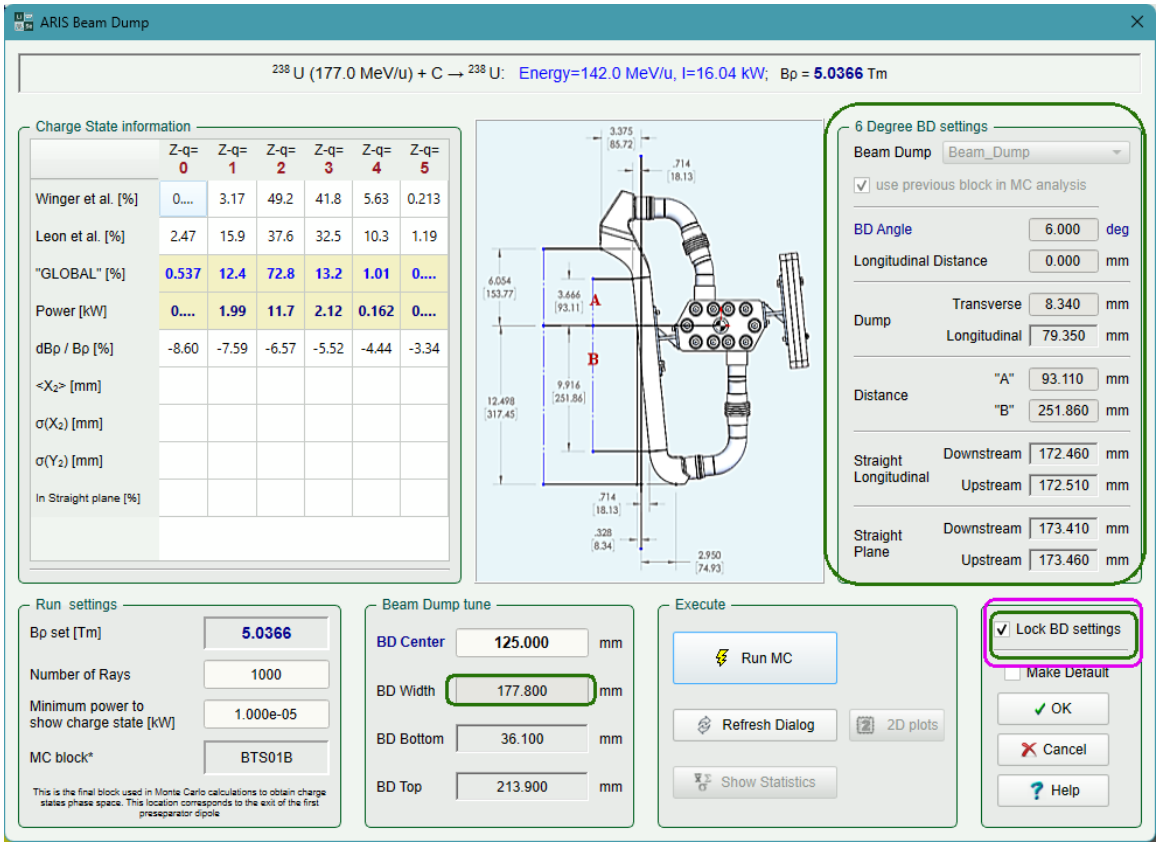
This period (April–August 2025) included numerous stability, usability, and performance updates. The main user-visible improvements are summarized as follows:

- 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.

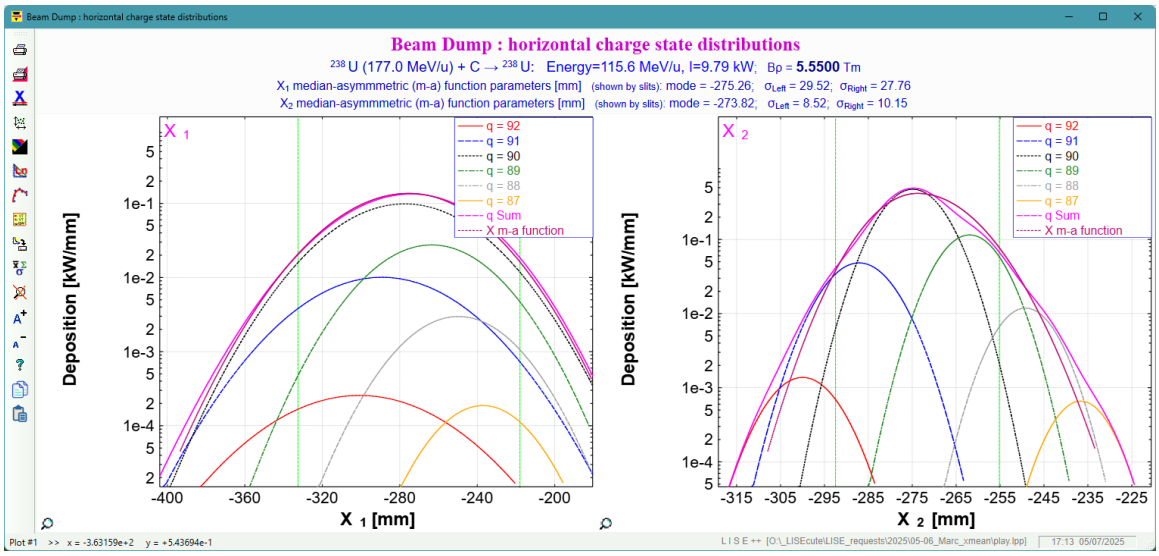
## Digital certificate signing information



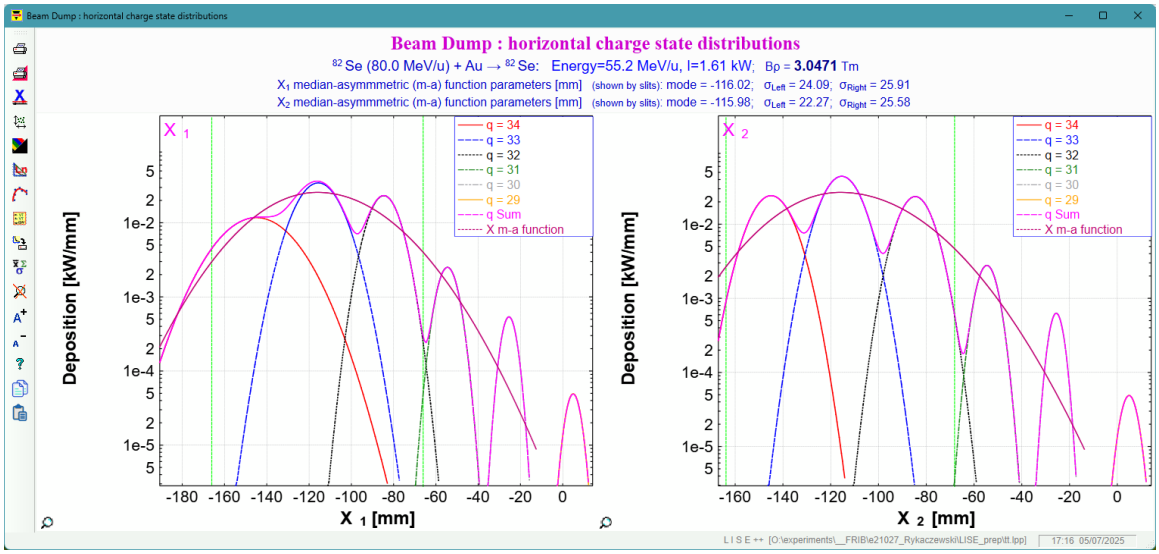
## Beam Dump dialog with 'Lock BD settings'




## Beam Dump charge state distributions (example 1)



## Beam Dump charge state distributions (example 2)

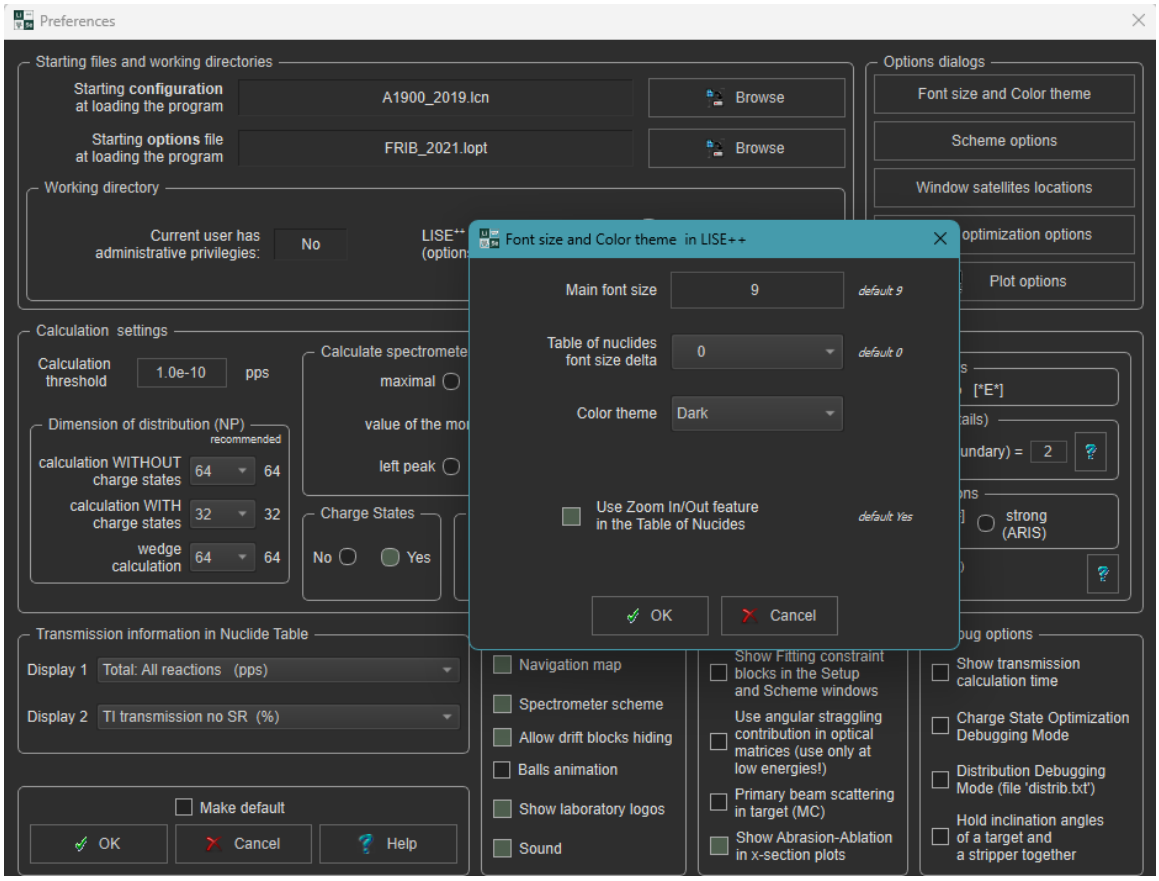



## Beam Dump statistics output

***For all charge states***

| Value | Median | σ Left | σ Right |
|---|---|---|---|
| dBρ / Bρ | -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