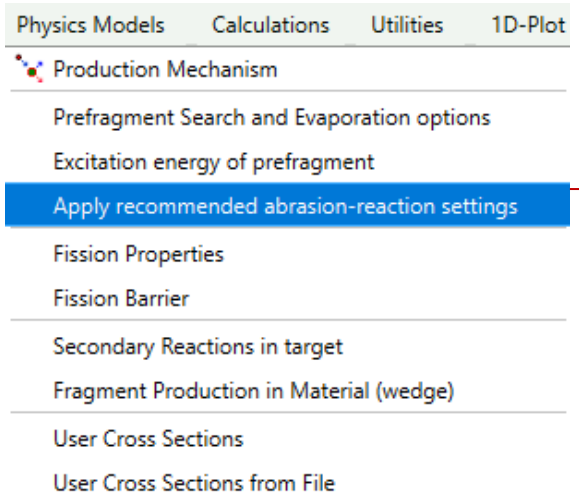
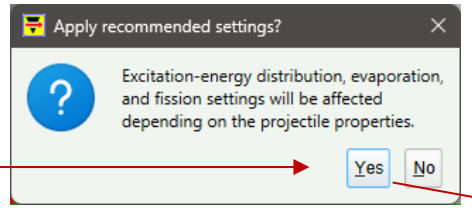
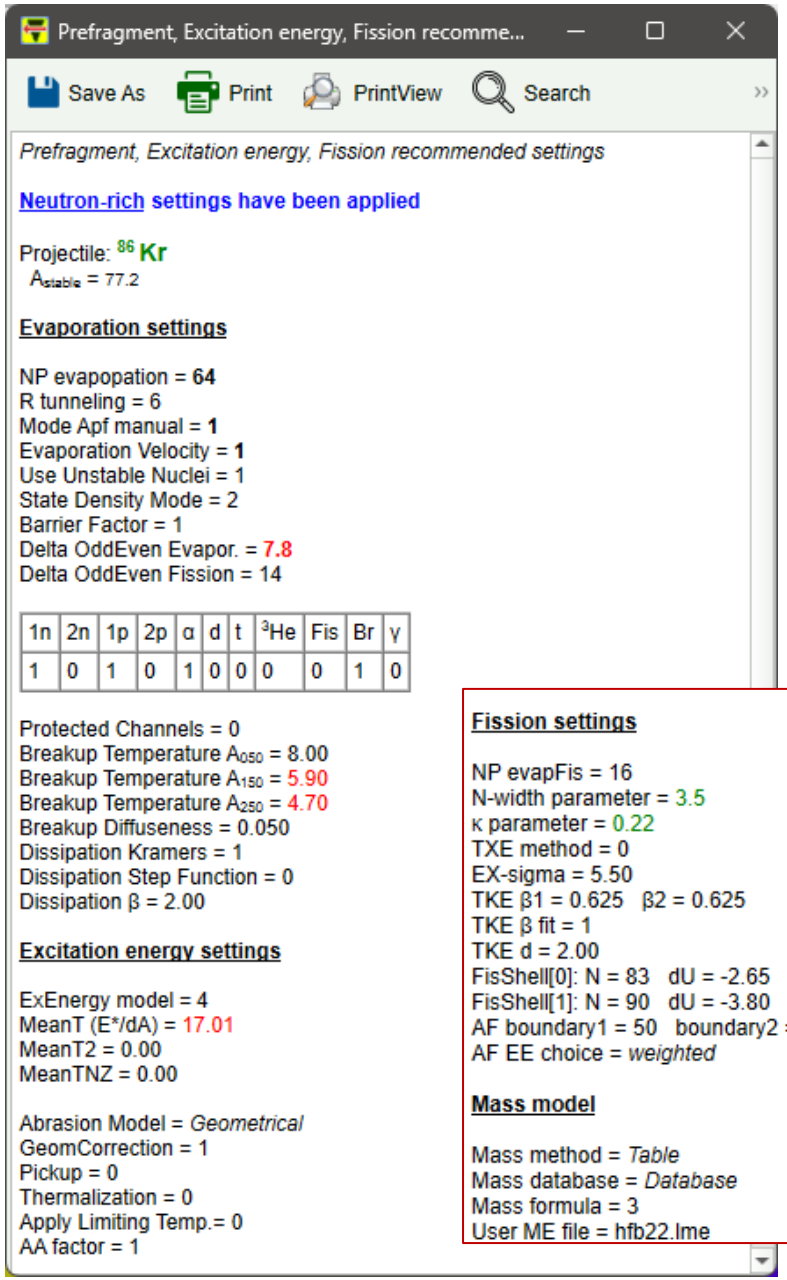
From 11/26/25

- Recommended abrasion-reaction settings
- AA Minimization / Cross-Section Systematics
- Fission Model Improvements (N-width, κ, curvature smoothing)
- FRACS / SPACS / Reaction Models
- Graphs / UI Enhancements
- Data / Publications / Tables
- Miscellaneous & Integration

Recommended abrasion-reaction settings





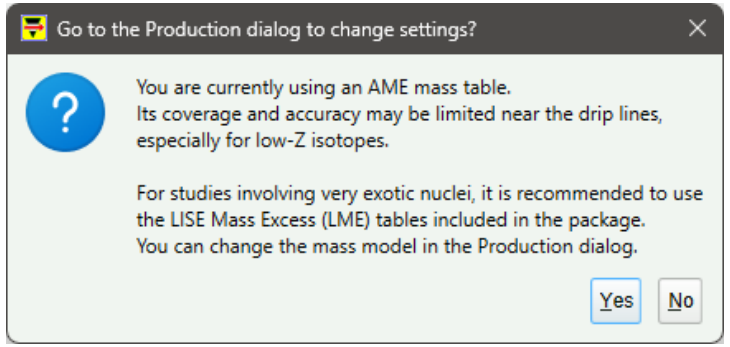


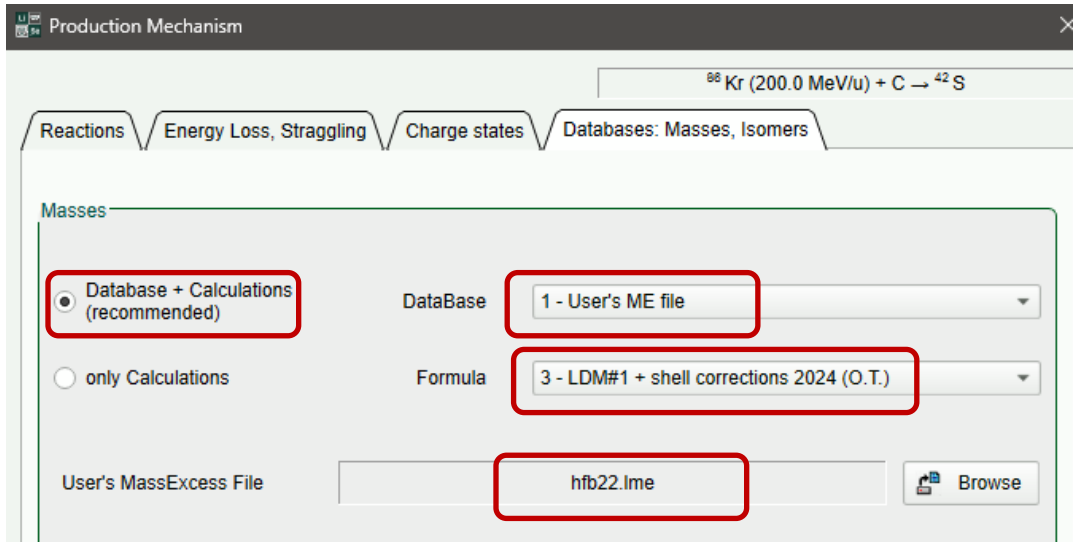
- The **Excitation-Energy #4 ("Tmean")** model is selected as the primary option
- Parameters shown in **red** depend on the **beam properties**
- The **fission channel** is enabled for $Z > 70$
- Several parameters were predefined based on the recent AA analyses using **^{82}Se**, **^{78}Kr**, and **^{124}Xe** data
- The tunneling radius $R_{tunneling}$ is now fixed to **6 fm** instead of using the previous $f(A)$dependence
- The former **"auto" mode** has been removed
- The default distribution dimension (**NP**) is set to **64** for evaporation and **16** for fission

Recommended abrasion-reaction settings: Mass model

Mass-Model Warning Behavior

- A warning message appears when:
- **AME** mass model is selected
- **LDM** is chosen as the primary approach
- The **old LDM** model is activated to assist with unknown masses





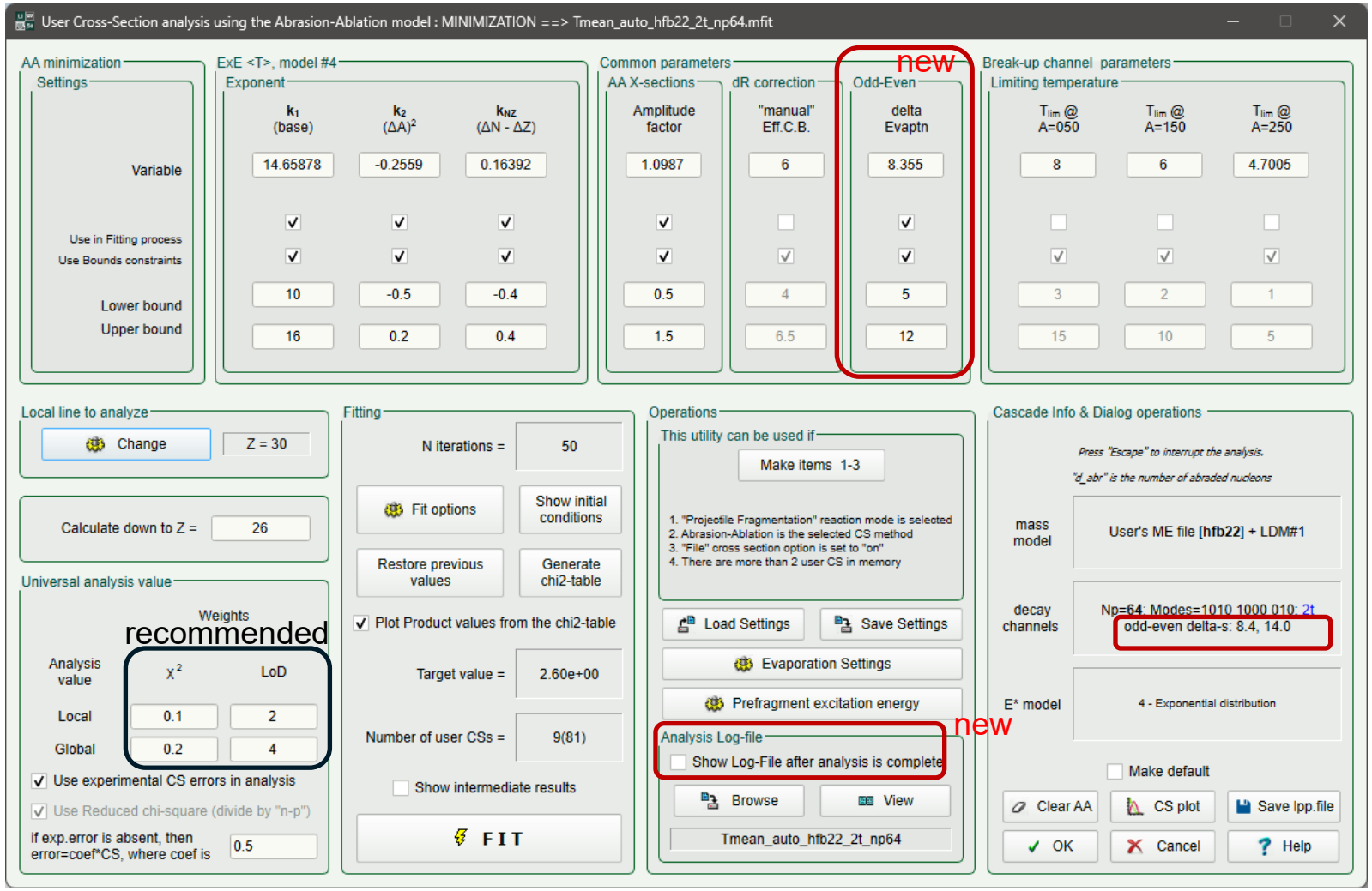
❑ **Reason:**
AME tables are based on *measured* masses, and their predictive performance becomes unreliable near the **drip lines**.
LISE therefore displays a warning when AME/LDM is used in these regions.

❑ **Recommendation:**
Recent cross-section analyses indicate that the **HFB-22** mass table provides the most reliable results near the drip lines.

We (Oleg, Shane, and Isaiah) are still actively finalizing parameter adjustments prior to the release of **version 18**.
At this stage, the expected release timeline has been **postponed to January–February 2026**.

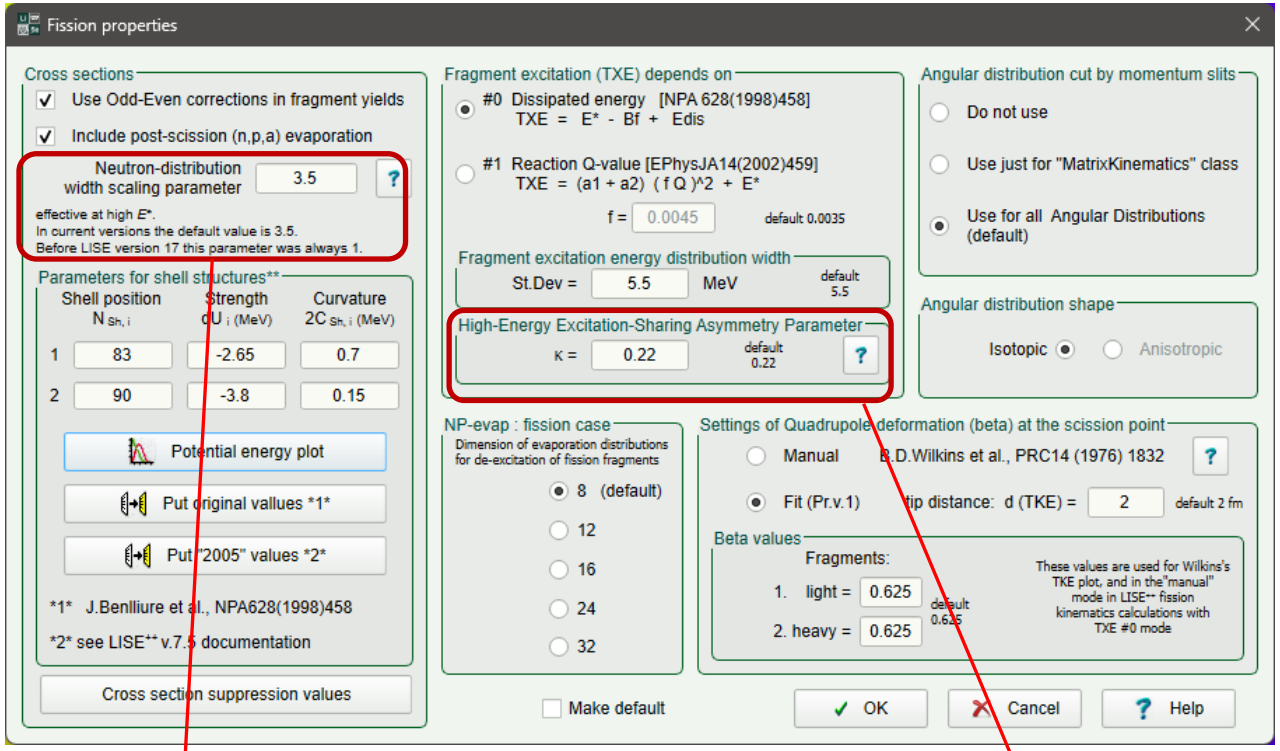
AA Minimization / Cross-Section Systematics

- AA minimization dialog: odd–even Δ display, CS plots (17.16.16–22)
- Enable/disable Δ parameters in prefragment dialog
- New penalty log(v0/v1) for CS minimization
- Strong revision of CmPlotCS_chi; soft pow10 introduced (17.16.23–32)
- New AA minimization options:
  - show results,
  - penalty for unbound nuclei (17.17.0–8)
- ENTER-key support in AA minimization dialog (17.17.9–14)



Fission Model Improvements

- New parameter FisNwidth for neutron-distribution width (17.17.0–8)
- Z^2/A macroscopic curvature smoothing implemented (17.17.0–14)
- Transition smoothing for all fission curvatures.
- New κ (kappa) high-energy L/H excitation-sharing parameter (17.17.15–17)
- κ and FisNwidth were integrated into Fission_compare and recommended settings
- Help links for FisNwidth and κ added



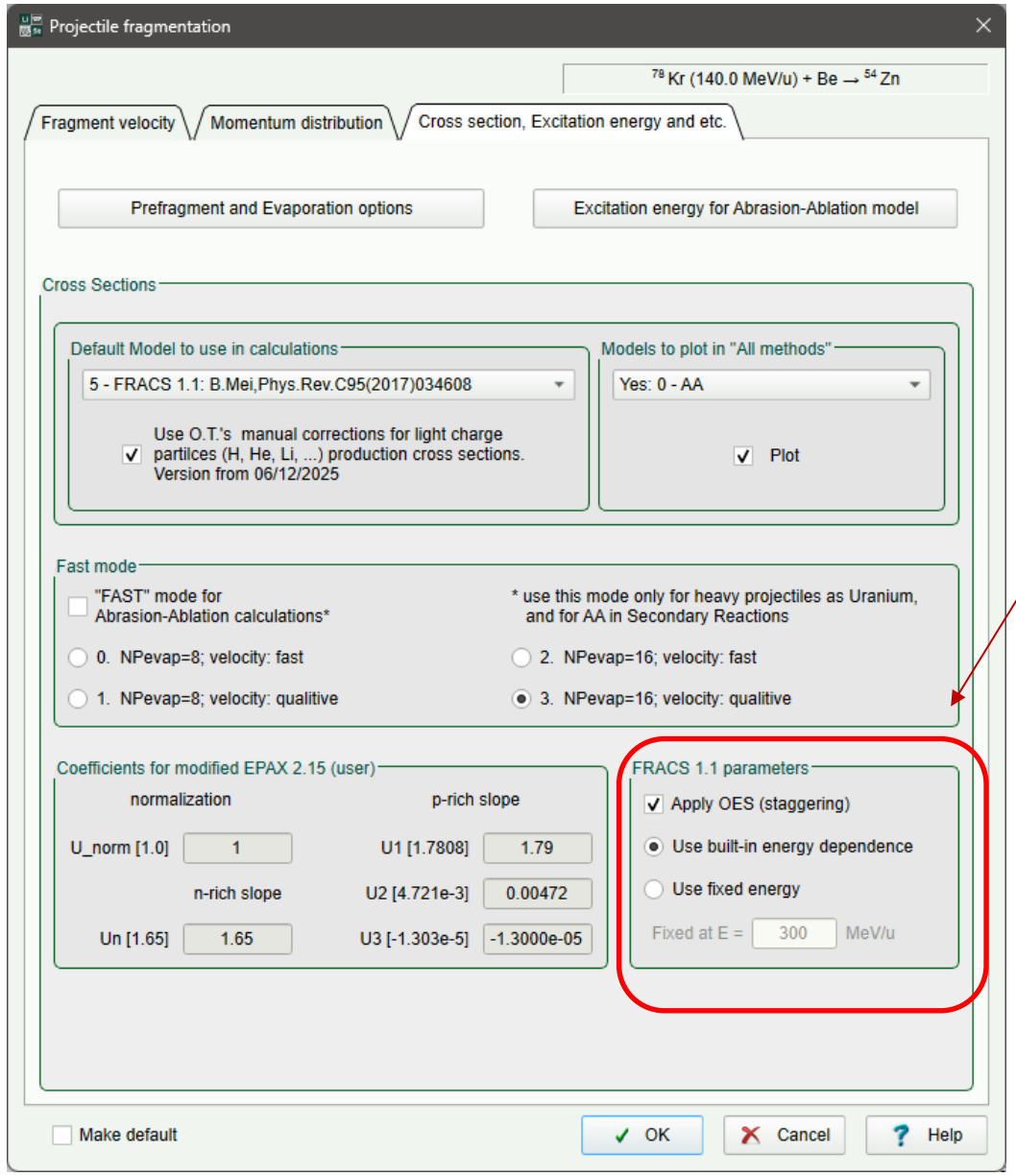
[LISE : Neutron-Distribution Width Parameter (N-width)](https://lise.frib.msu.edu/17/FisNwidth.pdf)
https://lise.frib.msu.edu/17/FisNwidth.pdf

[LISE : κ (Kappa) in High-Energy Abrasion–Fission](https://lise.frib.msu.edu/17/FisKappa.pdf)
https://lise.frib.msu.edu/17/FisKappa.pdf

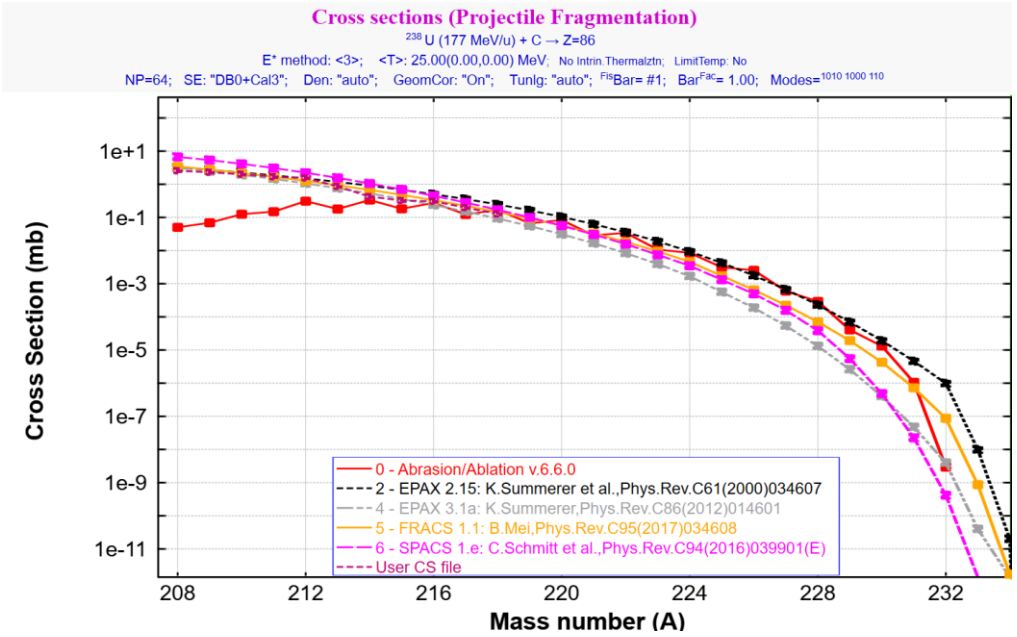
Final **LISE v17 Development Tasks Before Transition to v18**

- Determine the optimal combination of **E***, **Nwidth**, and **κ** to describe experimental data across a broad range of *Z*
- Prepare a **USER cross-section table** based on these results
- Create a new **LISE fission-settings file** to replace the current RIKEN CS table, which is fragmented across multiple *Z* regions

FRACS / SPACS / Reaction Models

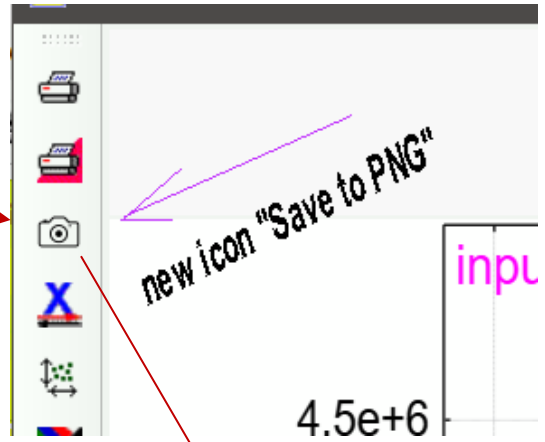


- FRACS: odd-even staggering (OES) implemented from FRACS paper
  the currently selected LISE mass table is used to calculate staggering
- FRACS: new UI options and initialization logic
- Projectile energy is now applied in FRACS
  in versions < 17.17, the energy was fixed at 300 MeV/u.
  Please pay attention to the beam energy when using FRACS!
- ==========
- SPACS model implemented (17.15.28–33)
- SPACS updated for A>2 targets (17.16.16–22)
- SPACS low-energy σ_R corrections
- SPACS temporarily disabled (17.17.0–8)
- *SPACS is currently hidden in* 17.17.17

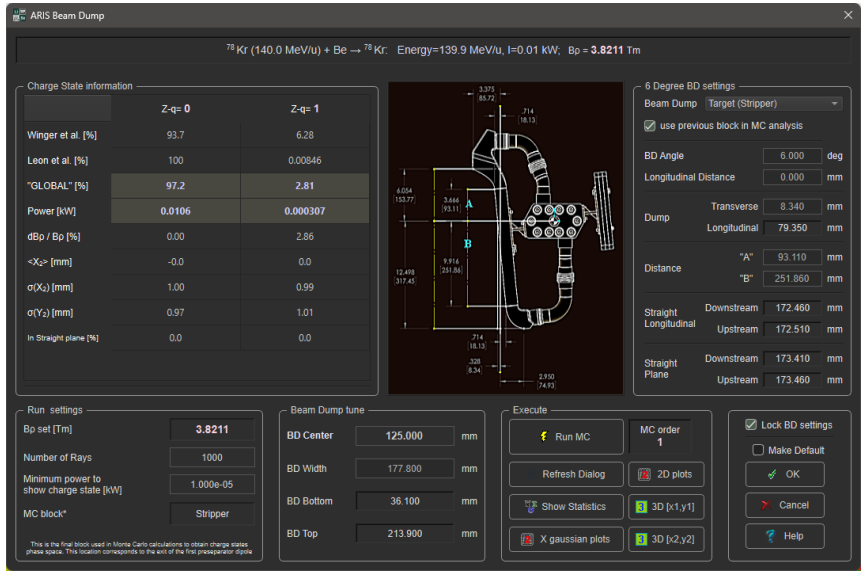


Graphs / Display / UI

- New graph action: Save Plot to PNG + Clipboard copy
- Monte-Carlo icon background fixes for Dark Mode
- Dark-mode color revision for MC and Beam-Dump plots
- File-name length warnings (Windows 240 / POSIX 4096)
- ENTER-key support in multiple dialogs (AA, Fission)
- Correction in CS-file plotting dialog (17.17.15–17)



"Save Graph to PNG" — when saving a plot to a PNG file, the plot's **QPixmap** is now automatically copied to the clipboard.
You may simply cancel the **Save dialog** if you only want the plot in the clipboard.



Data / Tables / Publications / Miscellaneous / System

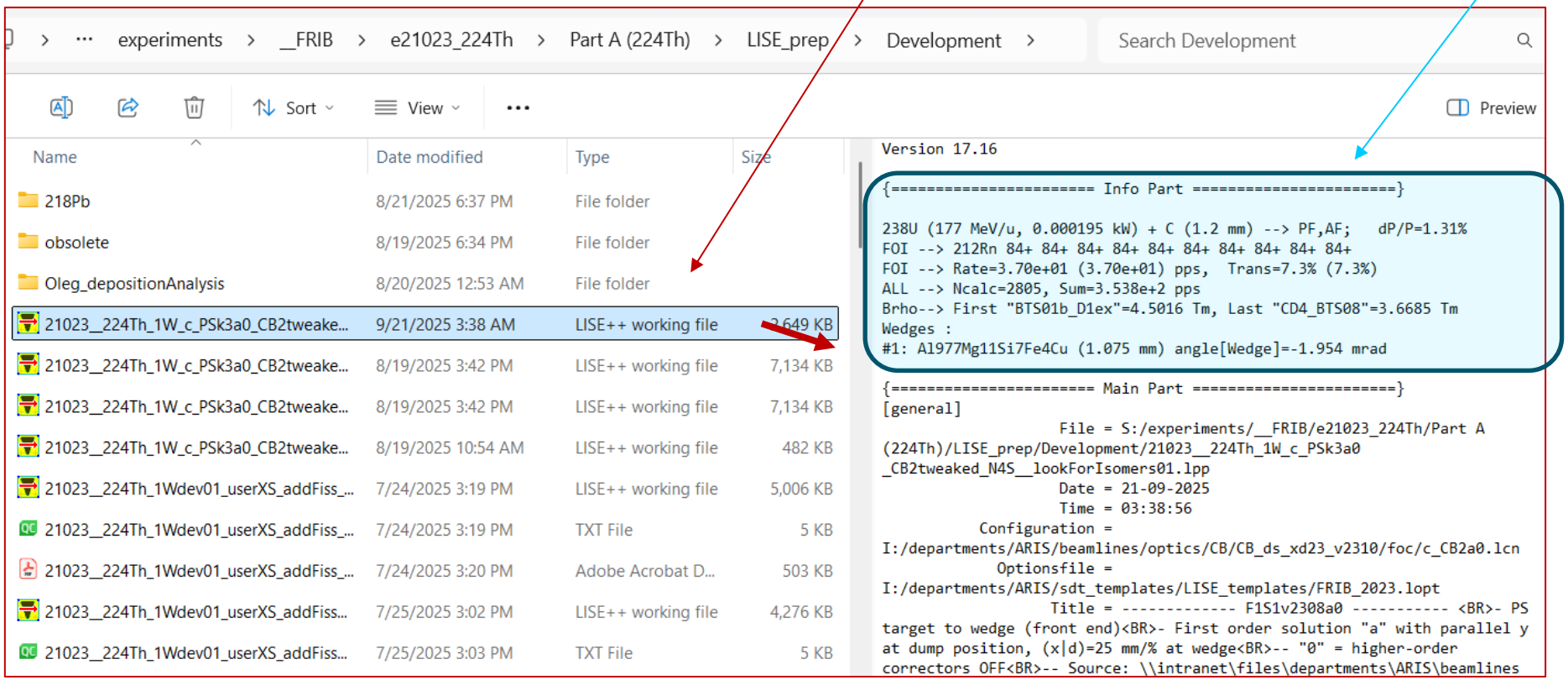
Data / Tables / Publications

- Bayesian-Averaged Cross-Section Analysis
- Unpublished cross-sections updated (17.15.27)
- Bayesian-Average cross-section sets for ^{144}Sm and ^{92}Mo
- Table of nuclides updated from BigRIPS proton-rich publication

Miscellaneous / System

- General code corrections and optimization of recommended parameters
- LISE-file preview enabled directly from Windows Explorer (Hudson Miltner's project)

New INFO block in LISE file



Update Summary: Version 17.15.27 → 17.17.17

Version 17.15.27 (01-Sep-2025)
- LISE for Excel: two updates.
- Unpublished cross-sections updated and corrected in package.

Version 17.15.28–17.15.33 (Sep 2025)
- Implementation of SPACS model.
- Projectile energy properly used in FRACS and SPACS.
- Temporary fixed energies for FRACS=300 MeV/u and SPACS=1000 MeV/u.
- Update in wedge-angle reduction method (profile-based).
- LISE file preview from Windows Explorer.

Version 17.16.0–17.16.7 (Sep–Oct 2025)
- New Bayesian-Average cross-section sets for 144Sm and 92Mo.
- Etacha 4.7/4.8 updates including perturbation-parameter diagnostics and equilibrium-thickness support.
- New graph action: Save plot to PNG (CmSavePng), with clipboard copy.

Version 17.16.8–17.16.15 (Oct 2025)
- Dark-mode icon background fixes for Monte-Carlo.
- File-name length warnings (Windows 240 / other OS 4096).
- Dark-mode color revisions for MC and Beam-Dump plots.
- Table of nuclides updated from BigRIPS proton-rich publication.

Version 17.16.16–17.16.22 (Nov 2025)
- AA minimization dialog improvements: odd-even Δ display and CS plots.
- ETACHA v4.8 batch file added.
- SPACS modified to support heavy targets (A > 2).
- SPACS low-energy σ_R corrections.
- Enable/disable Δ parameters in prefragment dialog.
- New log(v0/v1) penalty for cross-section minimization.

Version 17.16.23–17.16.32 (Nov 2025)
- Strong revision of CmPlotCS_chi; soft pow10 introduced.
- OES (odd-even staggering) from FRACS paper implemented in FRACS.
- New FRACS options in UI, lise-file, and initialization logic.

Version 17.17.0–17.17.8 (Nov 2025)
- SPACS commented out (temporarily removed).
- New AA minimization options: show results, penalty for unbound nuclei.
- New parameter opt->FisNwidth to control neutron-distribution width in fission at high E*.
- Fission plots & compare updated for N-width.
- Z^2/A transition smoothing in fission macroscopic curvature.

Version 17.17.9–17.17.14 (21–23 Nov 2025)
- Smooth Z^2/A curvature transition fully implemented.
- ENTER-key support in fission & AA minimization dialogs.
- Recommended abrasion-reaction settings + link to mass-model dialog.
- Optimization of recommended parameters.

Version 17.17.15–17.17.17 (23–24 Nov 2025)
- New high-energy excitation-sharing parameter κ (opt->FisKappa) added to Fission Properties.
- κ used in Fission_compare and recommended-settings engine.
- Help links for κ and N-width inserted.
- Correction in user cross-section plotting from CS-file dialog.