

LISE⁺⁺ v18.4.11 Update Summary

Release notes for updates 18.4.1 - 18.4.11, May 17-29, 2026

Short summary. Version 18.4.11 consolidates stability fixes in the Abrasion-Ablation de-excitation and distribution summation routines, introduces a controlled excitation-energy treatment for prefragment search and Universal Parameterization, improves CS/AA plotting and minimization support, and adds help access from the AA Excitation Energy dialog.

Related documentation: [Prefragment search and Universal Parameterization Updates](#)

Main changes

- **AA de-excitation stability and memory safety:** Replaced heap-sensitive new[]/delete mismatches by delete[] and avoided dynamic allocation for the temporary parent-distribution list in AbraAbla::Calculate(). The qualitative evaporation-energy distribution now uses log-space normalized weights instead of the fragile long double / mexpl / goto repeat block.
- **Distribution summation cleanup:** Corrected array deallocation in L_distrib1 and L_distrib2, reducing heap sensitivity in distribution-mode calculations.
- **Prefragment search and Universal Parameterization excitation energy:** Added E* buttons, global settings for excitation-energy mode/value, a dedicated excitation-energy dialog, and Fireball support for calculating APF excitation energy consistently.
- **Cross-section plotting and minimization:** Corrected CS/AA legend plots, introduced the CS2-base minimization dialog, and added G_ZupperLimit for setting an upper Z limit in AA minimization analyses.
- **Documentation/help connection:** Added a help button on the AA Excitation Energy dialog for IME-related guidance and linked the new UP/APF excitation-energy update document.

Detailed change log

Version	Date	Area	Description
18.4.1	05/17/26	AA de-excitation correction	Renamed o_AA: de_excitation -> correction; replaced fragile long double / mexpl / goto repeat logic in if(G_EvaporationVelocity==0) with log-space normalized weights; replaced delete with delete[] for arrays allocated by new[].
18.4.2	05/17/26	Distribution memory handling	Replaced wrong delete calls with delete[] for arrays allocated by new[] in L_distrib1 and L_distrib2. Fixed heap-sensitive memory handling in AA de-excitation and distribution summation routines; avoided dynamic allocation for the temporary parent-distribution list in AbraAbla::Calculate().
18.4.3	05/18/26	CS/AA plotting	Corrected legends in CS/AA plots.
18.4.4	05/20/26	UP/APF user interface	Added E* buttons for Universal Parameterization in the APF and UP dialogs.
18.4.5	05/20/26	Global excitation-energy settings	Added Global values for UnivParameterization -> Excitation Energy: G_ExcitationApf1_type, where 0 means constant value mode and 1 means current AA; and G_ExcitationApf1_MeV for the constant value in MeV.
18.4.6	05/20/26	Excitation-energy statistics	Added DistrStat getExDistrStat(const Celement& CeUse, int method) to obtain excitation-energy statistics and fill FBall->disE.
18.4.7	05/20/26	UP/APF excitation-energy dialog	Added TApf_ExUP_dlg for setting excitation energy for search prefragment and Universal Parameterization.
18.4.8	05/21/26	Fireball APF excitation calculation	Added double Fireball::calcExcitation_Apf(const Celement& Ce), completing support for the new G_ExcitationApf1_type update.

Version	Date	Area	Description
18.4.9	05/29/26	CS2 minimization dialog	Added the new CS2-base dialog d_PlotCS2_minimization.
18.4.10	05/29/26	AA minimization Z limit	Introduced G_ZupperLimit in AA_minimization to set the upper Z limit for analysis.
18.4.11	05/29/26	AA Excitation Energy dialog help	Added a help button on IME in the AA Excitation Energy dialog.

Upper Z limit in AA minimization analyses

The screenshot shows the 'User Cross-Section analysis using the Abrasion-Ablation model' dialog. The 'AA minimization Settings' panel includes a table for 'Exponent' parameters:

Variable	k_1 (base)	k_2 (ΔA) ²	k_{nz} ($\Delta N - \Delta Z$)
Value	16.55666	0.43333	-0.53171
Use in Fitting process	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Use Bounds constraints	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Lower bound	7	-0.5	-1
Upper bound	30	0.5	1

The 'Analysis upper limit Z' is set to 23, highlighted with a pink circle. Other settings include 'Local line to analyze' (Z=22), 'N iterations' (100), and 'Fitting' options like 'Plot Product values from the chi2-table' and 'Use Diagonal Scaling'.

New/updated symbols

- `int G_ExcitationApf1_type // 0: constant value mode; 1: current AA`
- `double G_ExcitationApf1_MeV // constant value in MeV for type=0`
- `DistrStat getExDistrStat(const Celement& CeUse, int method)`
- `double Fireball::calcExcitation_Apf(const Celement& Ce)`
- `TApf_ExUP_dlg`
- `d_PlotCS2_minimization`
- `G_ZupperLimit`