

Performance

- 🚀 **Gauge optimized:** progress updates throttled (configurable Hz) — calculations run faster while Cancel stays responsive.
- ⚡ **MSVC Release build:** project tuned with full optimization flags, debug overhead removed, QT_NO_DEBUG_OUTPUT enabled.
- 🖥️ **Windows 11 Enterprise:** LISE disables OS background power-throttling, keeping speed constant even when not focused.

Benchmarking

- Abrasion–Fission task runtime:
 - v.17.14 → **363.4 s**
 - v.17.15 → **260.8 s**
- **~1.4× faster (≈ 28% improvement)**

Practical impact

- This version is well-suited for **LISE batch calculations**, especially for the *Initial Fissioning Nuclei* utility where long runs are common.

ETACHA 4.6 (project by A.Ray)

- LSODA integrator** added, with improved defaults.
- Euler** and **Adams–BDF** integrators available for quick or stiff problems.
- Warnings and defaults polished for production use.

The screenshot shows the ETACHA4 - eUntitled application window with the following configuration details:

- Version:** v.3 (selected), Y(1s,2s,2p),Y(3s),Y(3p),Y(3d) fast, for high E
- Integration model:** LSODA (Stiff Solver) (selected)
- Steps & Numerical uncertainties:** Absolute = 1.00e-8, Relative = 1.00e-4, Minimum step = 5 µg/cm², Maximum step = 2000 µg/cm²
- IONIZATION model:** CDW-EIS (default)
- EXCITATION model:** Symmetric-Eikonal (default)
- Corrections for PWBA (parameter "ibin"):** 0: empirical saturation correction (default)
- Reaction characteristics:** Kp (n=1) = 0.18, Kp (n=3) = 0.02, projectile velocity Vp = 33.364 au
- Target:** A=12, Element=C, Z=6, Thickness=1 mg/cm², Density=2.26 g/cm³
- Projectile:** A=207, Element=Pb, Z=82, Q=64, Energy (MeV/u): Initial=28.9, Final=28.532, Stopping power (MeV/mg/cm²): Initial=75.905, Final=76.335
- Show Results:** Event Logs, Intermediate output of cross sections, Plots (General set), Charge state evolution plot, Debug mode

Finished at 00:55:23
Elapsed time is 00:00:01 (or 1.795 sec)
Final energy : 28.458 (MeV/u)

output data in files:
00 to 09 EE- charge states in //intranet.ncsl.msu.edu/files/user/tarasov/My Documents/LISEcute/results/eUntitled_Eta0009.txt
10 to 19 EE- charge states in //intranet.ncsl.msu.edu/files/user/tarasov/My Documents/LISEcute/results/eUntitled_Eta1019.txt
20 to 29 EE- charge states in //intranet.ncsl.msu.edu/files/user/tarasov/My Documents/LISEcute/results/eUntitled_Eta2029.txt
30 to 39 EE- charge states in //intranet.ncsl.msu.edu/files/user/tarasov/My Documents/LISEcute/results/eUntitled_Eta3039.txt
40 to 49 EE- charge states in //intranet.ncsl.msu.edu/files/user/tarasov/My Documents/LISEcute/results/eUntitled_Eta4049.txt
50 to 59 EE- charge states in //intranet.ncsl.msu.edu/files/user/tarasov/My Documents/LISEcute/results/eUntitled_Eta5059.txt
bare 1s,2s,2p,1s2,1s2s,1s2p,1s2 2s,1s2x2p ions and sum of these in //intranet.ncsl.msu.edu/files/user/tarasov/My Documents/LISEcute/results/eUntitled_ETARIED.txt
mean 1s,2s,2p,3s,3p and 3d populations in //intranet.ncsl.msu.edu/files/user/tarasov/My Documents/LISEcute/results/eUntitled_POPMEAN.txt

WARNING! Next calculation will overwrite these files. Consider saving or renaming these results !

FINAL achieved >> T=1.000 mg/cm² <Q>=73.267 dQ=1.166 E=28.458 dSum=-2.000

Other Modifications

- UI polish: corrected icons, labels, wedge colors, and dark-mode cancel dialog.
- LISEforExcel PID calculator corrected.
- Added user messages (e.g. when no solution found).