

LISE++ Silent Mode

Command-line keys, execution flow, generated output files, and implementation notes

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Purpose: This document summarizes how command-line silent mode is parsed and executed in the current LISE++ source tree, including the flow of the recently added deposition, radiation, and Brho1 keys.

Basic Command Form

General syntax:

`LISE++.exe <LISE-file.lpp> -s [additional keys]`

- The first command-line argument is interpreted as the input file path. Silent-mode keys are parsed starting from the second argument after the file name.
- The input file should normally be a .lpp file for silent transmission workflows. The parser also recognizes .lcn, .lpp_list, .motsec, and .motrace for startup classification, but the silent calculation flow is designed around an opened LISE++ configuration file.
- The -s or /s key enables SpecialSilentMode. Other keys only become part of the automatic silent workflow when SpecialSilentMode is true.

Example: `LISE++.exe "S:\experiments\run.lpp" -s -calcAll -trans -energy -deposition -radiation`

Example with first Brho override: `LISE++.exe "S:\experiments\run.lpp" -s -Brho1=5.25 -calcAll -trans -save`

Recognized Keys

Key	Purpose	Effect / Notes
-s or /s	Enable silent mode.	Suppress startup UI behavior, skip welcome sound, put QMessageBox in silent mode, run the automatic calculation sequence, and close at the end.
-listiso=<file>	Load an isotope-list file.	Used for list-based calculations and outputs such as .res1, .res2, and .res5. Current parser form is dash-only and case-sensitive.
-calcAll	Calculate all fragments.	Runs CmTransAll() instead of FOI-only or list-based calculation. Current parser form is case-sensitive.
-trans	Write transmission result output.	After calculation, writes .res1 in addition to the always-written .res5 rate output. Current parser form is case-sensitive.
-energy	Write energy / ToF result output.	After calculation, writes .res2. Current parser form is case-sensitive.
-xyp	Write spatial and momentum distributions.	Writes .res6 for the fragment of interest. Current parser form is case-sensitive.
-tuneAll	Tune all Brho values.	Runs the full separator Brho tuning sequence before transmission calculation. Current parser

		form is case-sensitive.
-tuneFirst	Tune downstream from first dispersive block.	Uses the first enabled optical/dispersive block and tunes downstream, stopping according to the existing Faraday-cup logic. Current parser form is case-sensitive.
-tuneLast	Tune upstream from last dispersive block.	Uses the last enabled optical/dispersive block and tunes upstream. Current parser form is case-sensitive.
-Brho1=<value> or /Brho1=<value>	Set first dispersive-block Brho.	If the parsed value is positive, it is applied to the first enabled optic block after the stripper and automatically enables the tuneFirst sequence. Prefix matching is case-insensitive.
-deposition, /deposition, -dep, /dep	Save Power Deposition report.	After transmission calculation, writes the Power Deposition and rate-analysis text report beside the LISE++ file without opening the widget or asking for a file name.
-radiation, /radiation, -rad, /rad	Run Prompt Radiation silently.	After transmission and optional deposition, runs the Prompt Radiation utility with the default INI configuration, saves the HTML log, and saves detailed phase CSV files.
-save	Save the LISE++ file.	Writes the modified .lpp after calculations and optional output generation. Current parser form is case-sensitive.

Silent-Mode Execution Flow

- 1. Parse command line:** main.cpp identifies the input file from argv[1], then parses silent keys from argv[2] onward. A positive Brho1 value automatically selects tuneFirst behavior.
- 2. Initialize main window in silent state:** MainWindow sets QMessageBox silent mode, disables the startup splash, minimizes the main window, and suppresses the welcome sound.
- 3. Open the LISE++ file:** The .lpp file is loaded through the normal file reader. In silent mode, saved/restored calculation arrays are cleared with clear_iso() immediately after file read.
- 4. Load isotope list if requested:** If -listiso is present, the list is loaded and NCALC_MC becomes available for list-based transmission calculations.
- 5. Apply Brho1 if requested:** If Brho1 > 0, ApplySilentBrho1() finds the first enabled optic block after the stripper and sets its Brho value.
- 6. Tune optics if requested:** tuneFirst tunes downstream from the first optic block; tuneLast tunes upstream from the last optic block; tuneAll recalculates all Brho values.
- 7. Run transmission calculation:** If -calcAll is set, CmTransAll() calculates all nuclei. Otherwise, -listiso drives CmTransListCalc(); without a list, tableCallTransmissionNoshow() calculates the fragment of interest.
- 8. Write standard result files:** If calculations exist, .res5 is always written. -trans adds .res1, and -energy adds .res2.
- 9. Write optional distribution file:** If -xyp is set, .res6 is written for the fragment of interest.

10. Write optional Power Deposition report: If -deposition or -dep is set, savePowerDepositionReportSilent() writes the text report beside the active .lpp file.

11. Run optional Prompt Radiation: If -radiation or -rad is set, MainWindowPR runs with the default PromptRadiation.ini, saves the log, and writes detail CSV outputs.

12. Optional save and exit: If -save is set, the .lpp file is saved. The code logs ?Silent mode passed!? and closes the main window.

Output Files

File	Content	When Created
.res5	Rate output	Written after silent transmission calculations whenever NCALC >= 0.
.res1	Transmission output	Written when -trans is supplied.
.res2	Energy / ToF / energy-loss output	Written when -energy is supplied.
.res6	Spatial and momentum distribution output	Written when -xyp is supplied.
<base>_powerDeposition.txt	Power Deposition and rate-analysis report	Written when -deposition or -dep is supplied. The current source uses the suffix _powerDeposition.txt.
<base>_radiation.html	Prompt Radiation main log	Written when -radiation or -rad is supplied.
Prompt Radiation detail CSV files	Detailed phase tables	Written by the Prompt Radiation silent run using the existing default CSV filename pattern.

Dialog, Gauge, and Prompt Suppression

- QoMessageBox receives the global silent-mode flag, allowing project-specific message boxes to avoid interactive blocking during silent calculations.
- The startup welcome sound is skipped in silent mode through MainWindow initialization and MyPlaySound() also checks LISEstart.SpecialSilentMode.
- Long-running calculation gauges are guarded in the key silent paths, including transmission-all, LISE file loading, fission/abrasion-fission, and secondary-reaction calculations.
- When opening a file in silent mode, clear_iso() is called after read. This prevents saved reaction-in-material calculations from producing the ?Clear all calculations?? prompt and ensures the requested calculation starts from a clean calculation table.

Prompt Radiation Silent Flow

- The -radiation key does not use the interactive ARIS Prompt Radiation password path. The silent path directly constructs MainWindowPR and calls runSilentDefaultConfiguration().
- runSilentDefaultConfiguration() switches to the default PromptRadiation.ini, calls the same calculation request path as F5, and then saves the main Prompt Radiation log to the default HTML file.

- Detailed debug tables are saved using their default CSV naming logic. User-facing widgets are not required for this path.

Recommended Usage Patterns

FOI rate only: `LISE++.exe file.lpp -s`

FOI rate plus transmission and energy reports: `LISE++.exe file.lpp -s -trans -energy`

All-nuclei transmission: `LISE++.exe file.lpp -s -calcAll -trans`

All-nuclei transmission with Power Deposition report: `LISE++.exe file.lpp -s -calcAll -trans -deposition`

First-Brho retune and save: `LISE++.exe file.lpp -s -Brho1=5.25 -calcAll -trans -save`

Full automated radiation workflow: `LISE++.exe file.lpp -s -calcAll -trans -deposition -radiation`

Current Parser Notes

- Several keys are currently case-sensitive because they are compared as exact `std::string` values. These include `-calcAll`, `-trans`, `-energy`, `-xyp`, `-save`, `-tuneAll`, `-tuneFirst`, and `-tuneLast`.
- The `Brho1` parser is more flexible for prefix case because it lowercases the argument before checking `-brho1=` or `/brho1=`.
- The `deposition` and `radiation` keys accept dash and slash aliases, plus short aliases `-dep` and `-rad`.
- The option order generally does not matter, except that all keys must appear after the input file path. The `Brho1` key also forces `tuneFirst` after parsing is complete.