

ETACHA Batch File Manual

Operator reference for running ETACHA calculations from .betacha files and command-line automation.

Purpose

A .betacha file lets ETACHA run many projectile-target calculations in one batch. Each non-comment line describes one calculation. Optional keys can override the ETACHA version and physics models for that line only.

Command-Line Use

Command	Meaning
ETACHA4.exe file.etacha -r	Open an ETACHA input file and start the calculation automatically.
ETACHA4.exe file.etacha -r -q	Run one calculation and close ETACHA after completion.
ETACHA4.exe file.betacha -r	Load a batch file and run all valid rows.
ETACHA4.exe file.betacha -r -q	Run the full batch and close ETACHA after completion.

Batch Line Format

Required fields appear first, separated by spaces, tabs, or commas:

Ab Zb Qb Eb At Zt thickness density [optional keys]

Field	Description	Unit / Rule
Ab	Projectile mass number	integer > 0
Zb	Projectile atomic number	integer > 0
Qb	Projectile incident charge state	integer > 0
Eb	Projectile energy	MeV/u
At	Target mass number	integer > 0

Zt	Target atomic number	integer > 0
thickness	Target thickness	mg/cm2
density	Target density	g/cm3

Command-Line Mode Keys

Key	Accepted values	Applied setting
-v=	23, 3, 34, 4, 45	ETACHA calculation version for all rows in this run.
-i=	0, 1	Ionization model: 0 = CDW-EIS, 1 = PWBA.
-e=	0, 1	Excitation model: 0 = Symmetric, 1 = PWBA.
-L, /L, -l, /l, -log, /log	present or absent	Create detailed .txt output files when present.

The mode keys are supplied on the ETACHA4.exe command line, not inside individual .betacha rows. They are applied after each batch line is loaded into ETACHA and before the generated .etacha file is saved and calculated.

Without -L/-log, command-line autorun still writes the generated .etacha files and the batch summary CSV, but suppresses detailed .txt files.

Examples

```
ETACHA4.exe input.betacha -r -q -v=23 -i=1 -e=1
```

```
ETACHA4.exe input.betacha -r -q -v=34 -i=0 -e=0 -L
```

```
207 82 64 28.9 12 6 10.0 2.26
```

```
207,82,64,28.9,12,6,10.0,2.26
```

```
! lines beginning with ! or ; are comments
```

Outputs

- Each row is saved as a generated .etacha file in the configured results directory.
- The batch summary CSV is named after the .betacha file and the effective mode, for example YourFile_results_v23i0e1.csv.

- The CSV includes input fields, QM, QF, sigma(QF), iQmax, residual energy, equilibrium thickness estimates, and the generated .etacha path.
- Detailed ETACHA .txt output files are written only when -L or -log is supplied.

Practical Checks

1. Start with two or three rows before launching a large batch.
2. Use -q for unattended automation only after confirming the output folder is correct.
3. Open the generated .etacha files if a row gives unexpected results; they preserve the command-line version and model settings used for that run.
4. Use v.34 only with ETACHA 4.8.10 or newer, because the Y(4) charge-distribution correction is included there.