# Compliance sheet — star-tabint

Everything a supplier qualification, a legal review or an export check usually asks about star-tabint 0.1.0, in one document.

## 1. Identity

| | |
|---|---|
| Document | STAR-PKG-STAR-TABINT-EN · v2.3 · 2026-11-14 |
| Package | star-tabint |
| Version | 0.1.0 |
| Capability | star.numerics.tabulated-integral |
| Maturity | Released & Verified (RELEASED) |
| Python | >=3.9 |
| Source commit | dc09f61d |
| Source | https://github.com/Andrea07072000/S.T.A.R.-/tree/main/packages/star_tabint |

## 2. Licence and obligations

Apache License 2.0. You may use, copy, modify and distribute it, also commercially, and you receive a patent licence from the contributors. When you redistribute it: keep the LICENSE file and the copyright notices (and a NOTICE file, if a future version adds one), and state in modified files that you changed them. You may not use the S.T.A.R. name to endorse your product.

## 3. What it needs at run time

Nothing beyond the Python standard library: it works offline.

## 4. Integrity

SHA-256 fingerprints of the files published on this website. Check a downloaded file with:

```
python -c "import
hashlib,sys;print(hashlib.sha256(open(sys.argv[1],'rb').read()).hexdigest())" star_tabint-
0.1.0-py3-none-any.whl
```

| FILE | SHA-256 |
|---|---|
| star_tabint-0.1.0-py3-none-any.whl | 4ba5a650d4d9137d710344d359cdef0a3ff2 5604e3ca5f9cfbda576732c26174 |
| star_tabint.py | 55b09f2a14330272da5dac0e7159e5ca3915 8ea4462778a39897e50a3bc5ab44 |
| star_tabint-0.1.0-source.zip | 7021c4e4ed51897f5d5172de05f0a044c755 6950444f07b3e4b4c0eaf0b48abb |

# 5. What it does, and its limits

Trapezoid rule on any strictly increasing grid, its running integral and the composite Simpson rule for equally spaced samples, each evaluated exactly in rational arithmetic and rounded once; on 500 tables (1750 values) every value is identical to the exact rational value from SymPy, and NumPy and SciPy agree within 3.3e-16 of the sum of the absolute panel areas.

The value of a quadrature RULE on the samples, not the integral of the underlying function: the error of the rule (of order $h^2$ for the trapezoid, $h^4$ for Simpson on smooth data) is not estimated, and noisy or sparse samples give a correspondingly poor integral. No Simpson rule for unequal spacing or an even number of points, no higher-order rules, no extrapolation. "Exact" refers to the floats supplied. Exact arithmetic is slower than floating point.

- `trapezoid(xs, ys)` integrates the piecewise-linear curve through the points (xs strictly increasing, any spacing); `cumulative` returns the integral from the first point up to each point; `simpson(ys, step)` applies the composite Simpson rule to an odd number of equally spaced values.
- Each result is the float nearest to the exact value of the rule on the numbers given: lobes that cancel lose nothing, and every element of `cumulative` is rounded from its own exact partial sum.
- Measured on 500 tables of 2 to 60 points (1750 values): every value identical to the exact rational value (SymPy) rounded once; NumPy and SciPy within 3.3e-16 of the sum of the absolute panel areas.
- Every function returns floats or raises `ValueError`: tables that are not lists or tuples of 2 to 100000 finite numbers within 1e100, different lengths, abscissas not strictly increasing, an even number of values or an invalid step for Simpson.

# 6. Export, use and certification

The package is published and freely available. That usually takes software out of export-control lists, but not every use of it: read the page on space activities and export control before using it in a controlled programme. It is not certified or qualified for flight; the evidence describes what was tested and how.

# 7. Citation and bill of materials

```
@software{cavazzini_star_tabint_0_1_0,
  author  = {Cavazzini, Andrea},
  title   = {{star-tabint}: Integrals of tabulated data, correctly rounded},
  version = {0.1.0},
  year    = {2026},
  url     = {https://andrea07072000.github.io/S.T.A.R.-/software/star_tabint/},
  note    = {Apache-2.0. Source: https://github.com/Andrea07072000/S.T.A.R.-, commit dc09f61d}
}
```

CITATION.cff · BibTeX · SBOM CycloneDX 1.5 · SBOM SPDX 2.3

# 8. Warranty and liability

Provided "as is", without warranties or conditions of any kind (Apache License 2.0, sections 7 and 8), to the extent the law allows. This never excludes liability that the law does not allow to exclude.

Related: space activities and export control · acceptable use · evidence and limits · licence texts