Compliance sheet — star-slerp

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

1. Identity

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

2. Licence and obligations

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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_slerp-
0.1.0-py3-none-any.whl
```

FILE	SHA-256
star_slerp-0.1.0-py3-none-any.whl	353e85479c65a707360afd00a744af905bf46be7314d0cafe391b8736cd5b06c
star_slerp.py	74c8063585c8506e6ebd51060392d9af2b18fc5f83ef5be6d28a689efaabb6be
star_slerp-0.1.0-source.zip	c89998d768e2a837831d713f5cba1f6c30f2b848f9d5fb41120abb7647b116eb

5. What it does, and its limits

Spherical linear interpolation between unit quaternions along the shorter rotation, and interpolation in a table of attitudes at given times; on 600 pairs of attitudes the largest component difference is 4.4e-16 from SciPy Slerp and 3.3e-16 from a route through NAIF SPICE rotation matrices, axis and angle.

Interpolation at constant rate between two attitudes, nothing else: no angular velocity, no smooth (C1) interpolation across table rows (the rate jumps at each row), no extrapolation, no model of the true motion between samples. For a rotation of exactly 180 degrees both arcs are equally short and the result follows the sign of the q1 supplied; other libraries may choose the other arc. The quaternion convention is scalar-first Hamilton: data in another convention must be converted before use.

- `slerp(q0, q1, t)` returns the attitude reached after the fraction t of the rotation from q0 to q1, about the same axis and at constant rate; quaternions are (w, x, y, z), scalar first, of unit length.
- The path is always the shorter rotation: when q0 and q1 are in opposite hemispheres q1 is negated first. The result is of unit length and in the hemisphere of q0. `interpolate(times, quaternions, t)` applies the same rule between the two rows of the table that bracket t and refuses a t outside the table.
- Measured on 600 pairs of attitudes (rotations from 1e-9 rad to within 0.1 degree of 180 degrees, either hemisphere): the largest component difference is 4.4e-16 from SciPy `Slerp`, 3.3e-16 from a route through NAIF SPICE rotation matrices, axis and angle, and 2.2e-16 from ahrs above its linear-interpolation threshold.

- Every function returns a tuple of four floats or raises `ValueError`: a quaternion that is not four finite numbers of unit length within 1e-9 (never normalised silently), t out of range, a malformed or non-increasing table.

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_slerp_0_1_0,
  author  = {Cavazzini, Andrea},
  title   = {{star-slerp}: Interpolation of attitudes along the shortest arc},
  version = {0.1.0},
  year    = {2026},
  url     = {https://andrea07072000.github.io/S.T.A.R.-/software/star_slerp/},
  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

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