Compliance sheet — star-precession

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

1. Identity

Document	STAR-PKG-STAR-PRECESSION-EN · v2.3 · 2026-11-14
Package	star-precession
Version	0.1.0
Capability	star.frames.precession-iau76
Maturity	Released & Verified (RELEASED)
Python	>=3.9
Source commit	dc09f61d
Source	https://github.com/Andrea07072000/S.T.A.R.-/tree/main/packages/star_precession

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

FILE	SHA-256
star_precession-0.1.0-py3-none-any.whl	bfb71f438db06f21363eec177aa6c48f bb06fa43199e81799b0ebed16d092ab1
star_precession.py	5ed6d2722b7804a546434851509529d0 197698a6a5cd04da6fdb4d94b650c938
star_precession-0.1.0-source.zip	c4942a2956acb37701e17d94000c3caf ae9a60deb7ca110a35eb1e8a447973a3

5. What it does, and its limits

IAU 1976 precession matrix and vector rotations between J2000 and the mean equator and equinox of date over 1800-2200; equal to ERFA pmat76 to 1.2e-16 and within 0.21 arcsec of PyEphem's own precession.

IAU 1976 only: not the IAU 2006 precession (they differ by about 0.3 arcsec per century), no nutation (up to 17 arcsec), no frame bias between J2000 and GCRF (17 milliarcseconds). Enough for vectors known to a hundredth of a degree; not for arcsecond astrometry.

- `precession_matrix(jd_day, jd_frac=0)`: P = R3(-z) R2(theta) R3(-zeta) with the Lieske (1979) angles; identity at J2000.0. Reproduces the SOFA validation values of `pmat76` to 1e-15.
- `mod_from_j2000(r, ...)`, `j2000_from_mod(r, ...)` (the transpose) and `precession_angles_arcsec`.
- Measured on 500 dates over 1800-2200: every matrix element within 1.2e-16 of ERFA; 1500 directions within 0.21 arcsec of PyEphem, which carries its own precession code.
- Every function returns finite floats or raises `ValueError`: non-numeric, boolean, NaN or infinite input, a vector that is not three finite numbers, a date outside 1800-01-01 to 2200-01-01.

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_precession_0_1_0,
  author  = {Cavazzini, Andrea},
  title   = {{star-precession}: Between J2000 and the mean equator of date (IAU 1976)},
  version = {0.1.0},
  year    = {2026},
  url     = {https://andrea07072000.github.io/S.T.A.R.-/software/star_precession/},
  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