Compliance sheet — star-rotframe

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

1. Identity

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

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

FILE	SHA-256
star_rotframe-0.1.0-py3-none-any.whl	d7aaea061958485f24123ae989346f2aa0 d7cf58bc29e347037fe0f363b4c9c9
star_rotframe.py	a7e8682356b258cd2b7ed91f3f67657d8f 0b25ce4afa2ee1c93e8d7b77506cd2
star_rotframe-0.1.0-source.zip	55685fb2f3de7cd5ba8d396c21b66d9544 e5f95301a4be4c63aaa5d6ffe947b2

5. What it does, and its limits

Position and velocity between an inertial frame and a frame rotating about z at a given angle and rate, transport term included, in both directions; on 600 states there and back the results agree with NAIF SPICE (rav2xf), SciPy and astropy within 5.2e-16 of |r| and of |v| + |rate| |r|.

A rotation about one fixed axis at a constant rate. For the Earth this leaves out polar motion, precession, nutation and the variation of the length of day: this module is NOT a full ICRS-to-ITRS transformation, and the angle (Earth Rotation Angle or sidereal time) must come from elsewhere (see `star_era` in this repository). Over a day the neglected terms move a ground point by metres to tens of metres. No acceleration (Coriolis and centrifugal terms) is returned. Units are whatever the caller uses, consistently.

- `to_rotating(r, v, angle, rate)` returns r' = Rz(angle) r and v' = Rz(angle) v − w × r', with w = (0, 0, rate): the velocity seen in the rotating frame, transport term included. `angle` is in radians, about +z.
- `to_inertial` is the exact inverse. The default rate is the WGS-84 angular velocity of the Earth, `EARTH_RATE` = 7.292115e-5 rad/s; any other rate, of either sign, can be given.
- Measured on 600 states (orbits in km and in metres, random magnitudes, angles up to 1e8 rad, rates up to 0.1 rad/s), there and back: agreement with NAIF SPICE (`rav2xf`), SciPy and astropy within 5.2e-16 of |r| and of |v| + |rate| |r|; round trip within 3.4e-16.
- Every function returns two tuples of three floats or raises `ValueError`: vectors that are not three finite numbers within 1e15, an angle or a rate that is not finite or is out of range, booleans.

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_rotframe_0_1_0,
  author  = {Cavazzini, Andrea},
  title   = {{star-rotframe}: Position and velocity between an inertial and a rotating frame},
  version = {0.1.0},
  year    = {2026},
  url     = {https://andrea07072000.github.io/S.T.A.R.-/software/star_rotframe/},
  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