Compliance sheet — star-coords

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

1. Identity

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

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

FILE	SHA-256
star_coords-0.1.0-py3-none-any.whl	f7a0c85613d3781f46418371f99f795bdaa424330b54a5bf361eb88cc5b1101c
star_coords.py	80c6c016a17f7b4d2066eb5eba4708ccae6f151333e346a052f990b1249b80d0
star_coords-0.1.0-source.zip	bae774a4db5a932e7c9121bf9cf7d11ec44e7919e13bc604a03bbce6440976e4

5. What it does, and its limits

Spherical and cylindrical coordinates to rectangular and back; agrees with ERFA, SPICE and astropy to 3e-16 relative and 6e-14 deg on 600 cases in both directions, close to the axis included, and refuses out-of-range input.

Geocentric (spherical) latitude, not geodetic: for the ellipsoid use `star_geodesy`. No velocities. Colatitude conventions (physics spherical coordinates) are not offered: latitude is from the xy plane.

- `spherical_to_xyz(lon, lat, r)` and `xyz_to_spherical(x, y, z)` follow x = r cos(lat) cos(lon), y = r cos(lat) sin(lon), z = r sin(lat); longitude out in [0, 360), latitude from the arc-tangent (accurate at the poles), length without intermediate overflow or underflow.
- `cylindrical_to_xyz(rho, lon, z)` and `xyz_to_cylindrical(x, y, z)`: x = rho cos(lon), y = rho sin(lon).
- Measured on 600 cases (100 directions down to 1e-9 deg from the z axis, lengths from 1e-3 to 1e9), in both directions: components and lengths within 3e-16 relative and angles within 6e-14 deg of displacement of ERFA, SPICE and astropy (spherical) and of SPICE and astropy (cylindrical).
- Every function returns finite floats or raises `ValueError`: non-numeric, boolean, NaN or infinite input, longitude outside [-360, 360], latitude outside [-90, 90], a negative radius, a length or component above 1e300. On the z axis the longitude is undefined and returned as 0.

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_coords_0_1_0,
  author  = {Cavazzini, Andrea},
  title   = {{star-coords}: Spherical and cylindrical ⇄ rectangular coordinates},
  version = {0.1.0},
  year    = {2026},
  url     = {https://andrea07072000.github.io/S.T.A.R.-/software/star_coords/},
  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