Compliance sheet — star-cw

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

1. Identity

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

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

FILE	SHA-256
star_cw-0.1.0-py3-none-any.whl	eda4002ea00f051f4e7ccda6ab559179ad9f1edfa9a179d7864aae8b74313674
star_cw.py	f555f308539d79c45c15d29a258b0dde9f5ced0869ef4c3542706611a10e2999
star_cw-0.1.0-source.zip	0f2c3c08422d2278f4307d35d0701c2bc346ce83f1a53dba8de2191992e0b39e

5. What it does, and its limits

Closed-form Clohessy-Wiltshire transition matrix, free drift and two-impulse rendezvous in the chief's rotating frame; algebra equal to the matrix exponential within 1.1e-13, departure from real two-body motion measured per separation, singular transfer times refused.

Circular chief only (no Tschauner-Hempel), no J2, drag or thrust arcs, no collision check along the transfer, no optimisation of the transfer time. A found defect is recorded in the module: the first version returned an empty tuple from `propagate`; the cross-check now refuses answers that do not have six components.

- Frame and state: x radial outward, y along the velocity, z along the orbit normal, origin at the chief; state (x, y, z, vx, vy, vz) relative to the rotating frame; n in rad/s; any consistent length unit.
- `stm(n, t)` (6x6) and `propagate(state, n, t)`: the closed-form solution; agrees with SciPy's matrix exponential of the system matrix within 1.1e-13 relative on 300 states and times up to three revolutions.
- `rendezvous(r0, v0, rf, n, t)` returns (dv1, dv2): the impulse now that brings the deputy to the point rf of the rotating frame after t, and the impulse there that stops it relative to rf.
- Every function returns finite floats of the documented shape or raises `ValueError`: non-numeric, boolean, NaN, infinite or |value| >= 1e150 input; wrong shapes; n <= 0; t <= 0 for a rendezvous; and the singular transfer times (whole and half revolutions, and the other roots of 8(1 - cos nt) = 3 nt sin nt), where no finite impulse reaches an arbitrary point.

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_cw_0_1_0,
  author  = {Cavazzini, Andrea},
  title   = {{star-cw}: Relative motion near a circular orbit (Clohessy-Wiltshire)},
  version = {0.1.0},
  year    = {2026},
  url     = {https://andrea07072000.github.io/S.T.A.R.-/software/star_cw/},
  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