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f27r Prospective Harmonic Transfer

Astronomical reproduction, window selectivity and provenance audit

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Framework by Christine Preedy | Independent testing, reconstruction, and report by Juan Gabriel Molina.

Abstract

This report consolidates the clean external record for the f27r harmonic test. The preserved protocol describes a 70-day reconstruction with 31 planet/gate events, a frozen Mars trigger, harmonic family 60/90/120/180 degrees and acceptance threshold ≤ 0.5 degree, applied to externally supplied challenge years 1390, 1410 and 1435. Four frozen daily observations are recomputed with a standalone Swiss Ephemeris/Moshier verifier on Julian civil dates at 00:00 UT. The resulting Mars-Sun orbs are 0.054918, 0.038227, 0.035880 and 0.065683 degrees; all four pass and reproduce the archived values to better than $1e-9$ degree in this environment. The historical audit also records exact-window circular-shift controls showing that qualifying events are common in the wider windows; the narrow 1410 window is the most selective but still yields an any-hit rate of 44.9% under shifts. The result therefore supports successful transfer of the frozen astronomical rule to the recorded challenge windows. It is not, by itself, strong rarity evidence, and the clean package does not reconstruct the original 31-condition gate-schedule derivation end to end.

Research question and scope

Do the four frozen f27r Mars-Sun harmonic observations recompute under a standalone ephemeris verifier, and how selective are the recorded challenge windows after accounting for their width? The report separates three layers: manuscript-side/protocol provenance, astronomical numerical reproduction, and selection-aware rarity. This separation prevents a 4/4 numerical pass from being overstated as a complete blind or statistically rare validation.

Keywords: Voynich Manuscript; f27r; Mars; solar harmonics; prospective transfer; ephemeris; window selectivity; reproducibility

1. Frozen protocol and manuscript-side record

Property	Frozen record
Native transcription blocks	91
Planet/gate events	31
Phase 1 duration	37 days
Phase 2 duration	33 days
Total duration	70 days
Phase 1 trigger	Mars before Sunrise
Phase 2 trigger	Mars before Midnight
Harmonic trigger planet	Mars
Harmonic family	60, 90, 120, 180 degrees
Acceptance threshold	≤ 0.5 degree
Near-window extension	Not allowed

The historical audit records the f27r source package, protocol, challenge-year provenance, trigger planet, harmonic family and window rules as fixed before harmonic reconciliation. The primary interpretation is therefore prospective by provenance. It was not technically data-masked, because the supplied ephemeris workbook included ecliptic-longitude information alongside rise/set data.

1.1 Challenge years

The challenge years were 1390, 1410 and 1435. The 1390 reconstruction contains two eligible windows, yielding four frozen astronomical observations in total. The test does not select a different harmonic family or trigger planet after observing the four reported outcomes.

2. Recorded viable windows and boundary scope

Case	Recorded window	Candidate starts
1390 W1	frozen first 1390 window	239
1390 W2	1390-07-20 through 1391-03-18	242
1410	1410-03-03 through 1410-04-15	44
1435	1435-01-03 through 1435-09-25	266

Table 1. Window summary preserved from the final f27r audit. The first 1390 source matrix remains valid one day beyond the submitted window ledger (through 16 April rather than 15 April); the qualifying March event lies inside either boundary, so the astronomical outcome is unchanged.

The 1410 window is only 44 starts and is the most selective of the four recorded cases. The second 1390 and 1435 windows are much wider and naturally span more opportunities for one of four harmonic angles to occur.

2.1 Scope of the clean package

The current public package preserves the frozen observation rows and recorded window summaries and separately recomputes their astronomy with the packaged verifier. It does not regenerate the full 31-condition manuscript-to-window schedule from an original pre-reveal spreadsheet because that complete artifact is not part of the recovered clean execution set. This limitation is preserved explicitly rather than filled in post hoc.

3. Standalone ephemeris method

The verifier uses `pyswisseph` / Swiss Ephemeris in Moshier mode. Each frozen date is interpreted as a Julian civil date at 00:00 UT. Apparent geocentric ecliptic longitudes are computed for the Sun and Mars. Their angular separation is wrapped into 0 to 180 degrees, then compared with the frozen target angle.

```
separation = abs((((Mars_lon - Sun_lon + 180) mod 360) - 180))
orb = abs(separation - target harmonic)
```

The calculation contains no fitted parameter. The target angle and date are read from the frozen observation table, and the pass rule is the frozen ≤ 0.5 degree threshold. The package writes the Sun longitude, Mars longitude, separation, orb and PASS/FAIL state for every row.

3.1 Numerical reproduction tolerance

The maximum absolute difference between the recomputed orbs and the archived twelve-decimal values is $4.067\text{e-}13$ degree. The four values therefore reproduce to much finer precision than the 0.5-degree acceptance threshold.

4. Harmonic results

Case	Julian date	Target	Orb (deg)	Exact crossing	Pass
1390 W1	1390-03-21	60	0.054917526	1390-03-20 18:32:39 UT	YES
1390 W2	1390-09-11	120	0.038226756	1390-09-10 22:49:27 UT	YES
1410	1410-04-11	90	0.035879797	1410-04-11 01:33:52 UT	YES
1435	1435-06-15	120	0.065682701	1435-06-15 02:42:05 UT	YES

Table 2. Standalone daily-row reproduction of the four frozen observations. All four satisfy the declared ≤ 0.5 degree criterion.

4.1 Window-specific interpretation

1390 W1 contains a 60-degree Mars-Sun event; 1390 W2 contains a 120-degree event and additional qualifying harmonic opportunities within the broad window. The 1410 window contains the most selective reported daily hit, a 90-degree event on 11 April. The 1435 window is broad and spans events from multiple members of the four-angle family.

4.2 Horizon-method robustness

A later horizon-classification review widened timing tolerances for horizon-form planets but reported no change to the f27r admissible windows. The four horizon-form occurrences on this folio were identified as Saturn rather than the Mars trigger used in the harmonic check. The frozen Mars harmonic result therefore remained 4/4 under the reconciled record.

5. Selection-aware window control

Window	Any ≤ 0.5 deg hit	Best orb as good/better
1390 W1	85.6%	40.3%
1390 W2	86.2%	29.1%
1390 combined	98.5%	58.0%
1410	44.9%	14.9%
1435	100.0%	89.9%

Table 3. Historical selection-aware control: the exact frozen window masks were circularly shifted across the corresponding evaluable date space. These percentages are preserved audit results, not regenerated by the four-row ephemeris verifier.

The control changes the evidential interpretation. Every recorded challenge window contains a qualifying harmonic, but the wider windows would frequently do so after a same-pattern shift. The 1435 window has a 100% shifted-mask any-hit rate, while the 1410 window has the smallest any-hit rate at 44.9% and a 14.9% rate for an orb at least as good as the observed one.

5.1 What 4/4 means

The 4/4 outcome is a successful rule-transfer result: the frozen trigger and frozen harmonic family produce accepted events in the recorded challenge windows without changing the rule after reveal. It is not a claim that the combined chance probability is extremely small. Window width and repeated harmonic opportunities matter, and the circular-shift results show that explicitly.

6. Interpretation, blindness and claim boundary

6.1 Supported statement

The four specified Mars-Sun harmonic observations are numerically reproducible with the packaged verifier, and all satisfy the frozen ≤ 0.5 degree criterion. The preserved audit record describes the trigger, family and challenge years as frozen before harmonic reconciliation. The result is therefore appropriately described as a successful prospective transfer by provenance, with the astronomical component reproduced by a separate verifier.

6.2 Blindness limitation

The experiment was not technically data-masked. The historical package did not contain a final reconciled harmonic result, and the claimant reported not checking the harmonics before freeze; however, longitude columns existed in the source ephemeris workbook. The strongest accurate phrase is therefore prospective by provenance rather than fully blinded by data access.

6.3 End-to-end reproducibility limitation

The clean package does not reconstruct the original 31-condition gate schedule or viable-window enumeration from manuscript text. The current verifier begins at the frozen daily observations. A future complete replication would require the original schedule workbook or an equivalently frozen 31-condition ledger together with pre-reveal timestamp/hash evidence.

6.4 Statistical limitation

The selection-aware controls show that 4/4 should not be converted into an unqualified rarity claim. Additional prospective tests with narrower windows, independently supplied dates and precommitted scoring would be more discriminating.

6.5 Reproduction versus independent replication

The packaged verifier reproduces the frozen astronomical rows and their numerical orbs. It does not constitute an independent replication of the full historical experiment because the original 31-condition gate schedule and complete pre-reveal freeze record are not regenerated from first principles.

7. Reproducibility, provenance and references

The package includes the four frozen observation rows, recorded window summary, selection-aware null summary, standalone Swiss Ephemeris verifier, recomputed outputs, result JSON, protocol, dependency file and SHA-256 manifest.

```
python -m pip install -r requirements.txt
python code/verify_f27r_harmonics.py
python verify_manifest.py
```

Input fingerprints:

frozen_observations.csv: aa0d7f780742b3bd2277ba5b56cb7912b7a098d2d21c38e2924bd34edc03dc50

selection_aware_null_summary.csv: 0e7b6bf019fee1b5dd3a4cccbfe6218306293be8b6e79f47e3eb11e13c7562e9

frozen_window_summary.csv: 29bda04e777d7ac976e4c8e994c353ca3259c1f3797edd1699ff4c9c3d7ae61b

References and source records

[1] Preedy, C. and Molina, J. G. (2026). f27r Prospective Harmonic Blind Test - Final Audit. Frozen provenance, window reproduction, ephemeris verification and selection-aware null summary.

[2] Preedy, C. and Molina, J. G. (2026). f27r Prospective Harmonic Test - Horizon-Method Robustness Rerun.

[3] f27r Prospective Harmonic Transfer Handoff, version 2026-09-11. PROTOCOL.md; code/verify_f27r_harmonics.py; results/result.json.

Contributions: Christine Preedy originated the framework and proposed interpretations. Juan Gabriel Molina contributed the testing architecture, astronomical verification, reproducibility packaging and report.