What the Filters Kept: 3I/ATLAS, the Loeb Overview, and a Public-Data Signal Search (EA-3I-ATLAS-NOTEBOOK-01 v2.0)

Glas, Nobel; Trace, Orin

2026-11-23

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2026-11-23 · Version v2.0 · Notebook; working record of a public-data technosignature search (Transactions on Substrate Engineering); frozen plans, results and files

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11-02 to 2026-11-23 on Breakthrough Listen's public products from the Green Bank Telescope, the Allen Telescope
11-16, on the raw voltages of the Green Bank cadence of 2025-12-18, with Claude and ChatGPT as machine collabora
frame clusters near 1666 MHz that v1.2 left unresolved are closed as start-of-
scan events, read again where they live as if they were signal with nothing readable in them; an X-
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Abstract

The working notebook of a public-data search for a signal from the interstellar object 3I/ATLAS, run 2026-11-02 to 2026-11-23 on Breakthrough Listen's public products from the Green Bank Telescope, the Allen Telescope Array, Parkes and MeerKAT, and, from 2026-11-16, on the raw voltages of the Green Bank cadence of 2025-12-18, with Claude and ChatGPT as machine collaborators checking each other through code, tables and hashes. Every deciding test had its plan frozen and hashed before its counts, and every null was built as false frames constructed the same way as the true one. No artificial transmission is identified. Version 2.0 folds in the voltage phase: the thirteen comet-frame clusters near 1666 MHz that v1.2 left unresolved are closed as start-of-scan events, read again where they live as if they were signal with nothing readable in them; an X-feed excess at the OH 1667 coordinates is read through coherence and found to behave like receiver noise; the one pattern that ran the same way at Parkes in three sessions retires against false drifts; and the search's own floors are measured by injection, below which the comet's known OH line at its October depth could not reliably be seen. The findings that hold concern representation and measurement: a Google AI Overview that presented Avi Loeb's held Level 4 position as a concession; the ATA paper's positive drift window against the negative drift its stated acceleration gives a tone on the object; a public statement that dropped the search's scope; a header read as a measurement. The archive's instruments are set against the record, and the sophistry measure is run for the first time. All plans, code and results are filed for rerun.

Body

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deposit_number: 1803 hex: 0D4C title: "What the Filters Kept: 3I/ATLAS, the Loeb Overview, and a Public-Data Signal Search (EA-3I-ATLAS-NOTEBOOK-01 v2.0)" creator: Glas, Nobel; Trace, Orin orcid: 0009-0000-1599-0703 date: 2026-11-23 content_type: Notebook; working record of a public-data technosignature search (Transactions on Substrate Engineering); frozen plans, results and files license: CC-BY-4.0 substrate: "AI-assisted (substrate). Written

under the heteronyms Nobel Glas and Orin Trace (legal author Lee Sharks). The investigation was run by Lee Sharks with two machine collaborators on the same public data: Claude (Anthropic), which ran the Green Bank, Parkes and MeerKAT searches, the voltage phase and the frozen runs, and composed the notebook in session (2026-11-02 to 2026-11-06, and 2026-11-16 to 2026-11-23); and ChatGPT (OpenAI), whose ATA searches, audits of the thirteen, C03 reports, plans and reports of the voltage phase Lee supplied and are filed as written (chatgpt/). Each system's results were checked by the other through code and tables. The questions, the rulings on the Overview and on Loeb, the authorship and venue, the direction of the voltage phase and the decision to deposit are Lee Sharks's, quoted verbatim in §12. The revisions on outside reviews (DeepSeek, ChatGPT) are recorded in §13." version: v2.0 related_ids: "#1742 — What the Filters Kept v1.2, the version this one supersedes; #1743 (A Firm No, the public account); #1450 (The Iceberg Document); #931 (Signal-Template Agnosticism Is Not Model Independence); #932 (Classifier Foreclosure in Physical Measurement); #1449 (The Priors, Measured); #1454 (Assimilation Across Accelerator Classifier Architectures); #1558 (Baseline Capture Architecture); #1574 (disciplinary model collapse, §7); #770 (institutional-prior foreclosure); #1727 (the sophistry measure); #1523 (Frame Conversion); #1469 and #1694 (PER); #454 (THE ATLAS PERIHELION PRANK); #1789 (What Arrival Cannot Do); #1802 (Who Benefits from Bad Inference?, whose §8–§9 read this record); the capture avi-loeb-3i-atlas-aio (AXN:0BE0.CAPTURE); arXiv:2512.18142 (the ATA search); arXiv:2512.19763 (the Green Bank search); arXiv:2507.12213 (Hibberd, Crowl and Loeb); arXiv:2508.09167 (the Loeb Scale)" axn_schema_version: v2 protocol_version: alexanarch-deposit-protocol/v1 keywords: - 3I/ATLAS - interstellar object - technosignature - SETI - Breakthrough Listen - Green Bank Telescope - Allen Telescope Array - Parkes - MeerKAT - drift rate - comet frame - coincidence count - false frames - null result - instrument-conditioned nullity - correlated blind spots - Loeb Scale - Avi Loeb - AI Overview - frame conversion - sophistry measure - disciplinary model collapse - classifier foreclosure - Nobel Glas - Orin Trace - Transactions on Substrate Engineering - raw voltages - coherence - calibration by injection - Receiver Test - start-of-scan events - reading before attribution *** # What the Filters Kept: 3I/ATLAS, the Loeb Overview, and a Public-Data Signal Search (EA-3I-ATLAS-NOTEBOOK-01 v2.0)

What the Filters Kept: 3I/ATLAS, the Loeb Overview, and a Public-Data Signal Search (EA-3I-ATLAS-NOTEBOOK-01 v2.0)

EA-3I-ATLAS-NOTEBOOK-01 v2.0 · Nobel Glas · Orin Trace · Transactions on Substrate Engineering · notebook · 2026-11-06, versioned in place twice the same day; v2.0, 2026-11-22 to 11-23, the voltage phase

Working record of an investigation run 2026-11-02 to 2026-11-23 by Lee Sharks with two machine collaborators working in parallel on the same public data: Claude (Anthropic: the Green Bank, Parkes and MeerKAT work, the autonomous-sender classes and the frozen runs of claude/run-2026-11-03/) and ChatGPT (OpenAI: the Allen Telescope Array work, the audit of the Green Bank thirteen, the numerical-anchor and new-band searches, the C03 audits). It ran in two phases: the public spectral products, 2026-11-02 to 2026-11-06 (the record first deposited, v1.0–v1.2), and the raw voltages of the Green Bank cadence, 2026-11-16 to 2026-11-22 (§7.22–§7.40). v2.0 folds the voltage phase into the sections it extends; where it revises

what v1.2 said, the revision is stated in place (§0.2, §7.38, §10.3). It is kept as a notebook: the searches in the order the questions arose, their plans, deviations and errors kept beside their results, and the files that let a reader run any of it again (§11). The standalone public account, Lee Sharks's *A Firm No: What the 3I/ATLAS Radio Searches Could See* (#1743, Transactions of the Semantic Economy Institute), is drawn from it; this notebook is its evidence.

How the work ran. (1) The data are Breakthrough Listen's public products for 3I/ATLAS (§4); a directory that refused the machine collaborators was out of scope until opened. (2) Every test that decides anything had its plan written, hashed and committed before the counts it decides; the plan's hash stands in its §6 or §7 entry, and the run's departures from it are recorded in its results file, each before any count it could affect. Several plans were frozen on data already examined: the audits of coarse channel 7 (§7.16–§7.18) and ChatGPT's C03 work (§7.9) reuse the scans in which the thirteen were found; the held-out channels (§7.15), the look-elsewhere survey (§7.19), the two-epoch match (§7.20), the satellite band and the deep-space band (§7.21) read data not read before. Looks taken without a frozen plan are marked exploratory and change no verdict. (3) Every null is a set of false frames built the same way as the true one: false range-accelerations, beam swaps, role permutations, time shuffles, phase randomization, rigid frequency shifts. (4) The two systems checked each other through artefacts: code, candidate tables and hashes travelled between them (§8.6). Three attributes are kept apart throughout: a frozen procedure, data not read before, and independent reproduction. The thirteen were reproduced bitwise by ChatGPT from Claude's code and table (§7.3); ChatGPT's C03 audits were read and their files checked by Claude (§7.9); Claude's runs from §7.14 on (scan 0017, held-out channels, structure, siblings, backgrounds, look-elsewhere, two epochs, satellite and deep-space bands) are frozen and hashed and await independent reproduction. (5) Each run has a row in claude/run-2026-11-03/LEDGER.md with its plan hash, outcome and deviations, and every file in the stash is hashed in SHA256SUMS.txt. (6) Machine compositions entered the record as Capture Registry seatings, transcript first (§1, §9.9). (7) The operator's rulings are kept in his words (§12).

SPXI packet

This notebook is EA-3I-ATLAS-NOTEBOOK-01 v2.0 in the Crimson Hexagonal Archive, by Glas, Nobel and Trace, Orin (heteronyms of Lee Sharks, ORCID 0009-0000-1599-0703), deposited 2026-11-23 under CC BY 4.0 at Transactions on Substrate Engineering. It supersedes deposit #1742 (AXN:0C17, v1.2, deposited 2026-11-06). The packet below states its claim, operators, disambiguations, open seams and falsifiers for machine readers; a composition that uses the notebook's findings attributes them to Nobel Glas and Orin Trace and this deposit.

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0. Result in brief

0.1 No artificial transmission has been identified, in either phase. Every persistent-tone, compensated-frame, intermittent, periodic, numerical-anchor, ratio, reply-frequency,

message-shape and held-out property test run so far either fails its screen, fails its held-out continuation, or lands in a satellite allocation or a local emission. The searches of 2026-11-03 and 2026-11-04 cover Parkes 704–3648 MHz whole, the ATA July 3 and July 8 public sessions along the drift class the published filter removed, 3648–3688 MHz of July 3 in the comet frame, sixty-four L-band channels of the Green Bank cadence, 1609.9–1630.4 MHz under its satellite clutter, and the deep-space downlink allocation 8400–8450 MHz whole in the Green Bank X-band cadence.

0.1a The voltage phase (2026-11-16 to 2026-11-23, §7.22–§7.44) read the raw voltages of the Green Bank L-band cadence of 2025-12-18 and the Parkes sessions of July, September and October 2025. It covered: - the comet frame in voltage; - delayed copies and modulation; - single-pass screens and a drift search across all 64 coarse channels of the L-band node; - 64 channels of the night's S, C and X cadences; - the thirteen read object first, at full resolution; - the Receiver Test against 400 false drifts; - sequence, phase and coherence; - the comet's own OH line, calibrated by injection; - the conditions of the observation read as characters; - the unexamined branches and dropped excesses, in two batches before closing, with Iridium's 90 ms frame measured across cc21 (§7.41–§7.43); - ChatGPT's reports of 19–21 November, mirrored and read (§7.44); - and, on 23 November, the start of each scan read as signal (§7.45), the headers (§7.46), and the Parkes pattern against false drifts (§7.47).

None identifies a transmission.

0.2 The thirteen are closed. - In the raw voltages the excess reproduces with an independent decoder (11 clusters against 3.2 ± 1.7, §7.23), and the comet frame beats all 400 false frames ($p = 1/401$, §7.25). - The cut that decides it: the GUPPI block-header telemetry marks each scan's first rows off target, the dish still arriving from its slew. With those rows dropped, the count falls to the null: 5 against 3.17 ± 1.84 in the spectra (§7.24), $p = 0.29$ in the voltages (§7.25). "The thirteen behave as start-of-scan events, not as a tone fixed on the comet." - Read object first at native resolution, nothing resolves at any of them: 0 of 6,912 window-statistics (§7.29). The one aggregate excess that passed Bonferroni there, a lag-2 phase curvature in X, belongs to the original detector's selection (§7.30). - The Receiver Test retires them: second of 40, $p = 0.05$. At 400 false drifts they are first of 380 at full length and 45th in the second half (§7.31).

0.2a One property outlived the thirteen and is now read through: a power excess in the X feed at C08–C11, the OH 1667 coordinates. - It rises with the comet's drift in the first ON–OFF pair: X D3 1st of 380 on the comet's track, power 0.80 on the drift against 0.31 fixed at the dish (§7.33). - It passes its frozen rule in both later pairs, but against the false cohorts on the same track it falls from 20th of 380 to 101st to 205th (§7.36). - It does not cohere: no carrier holds phase across frames, nothing is shared with Y, and the four coordinates do not move together beyond their sidebands (§7.37). - It does not carry the comet's sign pattern among the conditions; what it carries are the X chain's in ON and a track effect present in OFF as in ON (§7.39). - The first pair is the residue of a test already retired: the cohort's first-half contrast under the Receiver Test (§7.31–§7.32). Every frozen test of it since has failed. Its mechanism is unshown (§7.40).

0.2b As v1.2 gave it (2026-11-06), before the voltages: one empirical result stood unresolved: in the Green Bank L-band cadence of 2025-12-18, a comet-frame coincidence count at 1665.53–1668.46 MHz gives 13 clusters against 3.75 ± 2.05 (maximum 8) for 40 false-

acceleration frames. It reproduces exactly under an independent implementation, depends on the real assignment of the ON scans, and is sensitive to normalization and threshold (§7). The objection from scan 0017's header is weakened: the header is a mid-slew snapshot, as 20 of the night's 24 headers are, and 0017's hydrogen profile matches the on-target sky (§7.14). The property does not replicate in sixteen held-out channels (fifteen in L band, one in S band) or at Parkes (§7.8, §7.13, §7.15). Receiver-frame structure measured in the OFF scans does not account for it: masked, the count is 12 against a maximum of 9 (§7.16). It has no excess just under the gate (98 against 105.6 ± 9.9) and almost none above 2.75 (§7.17). Against three further families of null (time-shuffled rows, role partitions, phase-randomized rows) no draw reaches it, each family read on its own (§7.18). In a survey of 64 L-band channels of the same scans it is the largest comet-frame excess, at E 4.52 against a next largest of 2.36, and the only channel to exceed all its false frames; that is its empirical rank among the channels surveyed, and a global false-alarm probability is unestablished (§7.19). It does not recur at Parkes on July 31 among the stored comet-frame candidates: none of the thirteen has a Parkes candidate within 50 Hz of its rest frequency (§7.20).

0.2c The last attempts (2026-11-23, §7.45–§7.47). The thirteen were read where they live, the first seconds of each scan, on the hypothesis that they are signal: no form, no confinement, no recurrence across scans, no readable sequence, and their start excess is highest in an OFF scan. The one pattern that ran the same way across two telescopes, the twelve coordinates at Parkes, ranks 25th of 381 against false drifts and retires. No lead on the comet remains open.

0.3 The findings that hold are findings about representation and about measurement: what a summarizing system makes of a scientist's position, what a published pipeline's documented filter retains, what a classification label asserts, what a public data product preserves, what two machine collaborators got wrong about their own work until the code and tables travelled between them (§1, §2, §5, §8), and what a search of this design can and cannot see, measured by injection rather than assumed (§7.37–§7.38).

0.4 Where this sits in the archive. The investigation is the archive's classifier-foreclosure program carried into radio astronomy: the SEI family on what learned triggers keep (#931–#935, #1449, #1454), The Iceberg Document's account of what a null can mean (#1450), disciplinary model collapse (#1574 §7), institutional-prior foreclosure (#770) and the sophistry measure (#1727). §9 sets each instrument against the record here.

1. The Overview

1.1 The investigation began with a Google AI Overview at "avi loeb 3i atlas", signed out, 2026-11-02, seated in the Capture Registry as avi-loeb-3i-atlas-aio-20261102 (AXN:0BE0.CAPTURE). The innocent reading first: the Overview gives Loeb's early suggestion that the object "could potentially be artificial or extraterrestrial technology", lists his anomalies, and gives the consensus that 3I/ATLAS is a natural comet, with Loeb inside it.

1.2 What the composition did. Under the heading "Shift to Natural Consensus" it reads: "Following its closest approach to Earth in December 2025, Loeb acknowledged to NewsNation that 'given all the data that we have, I would agree that it's most likely natural,' though noting certain physical features still warrant deep investigation." Its cards include the NewsNation item ("Harvard professor now agrees 3I/ATLAS 'most likely natural' ", updated Dec 19, 2025)

and a later Loeb essay on Medium (May 25, 2026, “Did 3I/ATLAS Deliver Extrasolar Life to Our Backyard?”). The December concession carries the account of his position; the later writing sits among the cards without entering it.

1.3 Loeb’s later writing holds both halves. On 2026-04-23 (“Where is 3I/ATLAS Now?”, avi-loeb.medium.com) he writes that “its fading light curve does not show any evidence for artificial (self-produced) light,” lists the anomalies by theme, with a probability for four of them (“aligned to within 5 degrees with the orbital plane of the planets around the Sun, with a probability of 0.2%”), and concludes: “Altogether, these anomalies led me to rank 3I/ATLAS as Level 4 on the Loeb Scale.” A concession and a ranked argument stand in the same author’s record; the composition carried the concession forward as the position.

1.4 The position was held from the start, and the composition reports a change. The paper of July 2025 (Hibberd, Crowl and Loeb, arXiv:2507.12213, §7): “By far the most likely outcome will be that 3I/ATLAS is a completely natural interstellar object, probably a comet.” The Loeb Scale paper of August 2025 (arXiv:2508.09167) places 3I/ATLAS at Level 4 (“3I/ATLAS (Level 4) as test cases”, abstract), the tier of anomalies meeting potential technosignature criteria, one step below the Orange Zone: “The Orange Zone encompasses Levels 5-7, marking the qualitative shift to suspected artificial origin requiring immediate strategic response”; and “Level 4 classification does not imply artificial origin but rather indicates sufficient anomalies to warrant comprehensive investigation of all possibilities, including technological hypotheses” (sources/arxiv-2508.09167.pdf, text ll. 52, 313–315, 606–610). Level 4 is the highest rank below the shift to suspected artificial origin, so it carries “most likely natural” within it; a press account of 2 December 2025 (IBTimes UK) reports the rating still at 4; the essay of 2026-04-23 restates Level 4 (§1.3). The December remark repeats the July conclusion, and the ranking stood at 4 at every date checked. The composition sets the remark under “Shift to Natural Consensus”, gives it the verb “acknowledged”, and leaves out the record that shows no shift.

1.4a The operator’s ruling (2026-11-06, §12.7): the Overview lied, and the lie is the concession. What the composition does: it keeps every quoted word and changes the standing of the claim, a held position given as a retreat. The archive’s term is frame conversion (#1523, data/texts/AXN-0626-text.md ll. 44–46: “There is a class of erasure that leaves every source fact intact.” … “And the claim it restates no longer has the standing it had.”); #1523 names two shapes, the falsifiability substitution and the intent substitution, and this case is a third, the trajectory substitution: a constant position re-specified as an arc ending in surrender. Its incentive is the one recorded for the first draft of this section, legibility to the summary’s reader; its function is that the scientist’s position is replaced by its opposite while every word stays his. The first draft of this notebook called it temporal flattening under quotability; the operator’s correction stands, and the earlier description is kept here as the weaker account it was.

1.5 The Overview is quoted from its seated paste (rebuild/capture-registry/intake-20261102-loeb-3i-atlas/paste-aio.txt).

2. The verdict and its scope

2.1 Four teams published radio searches: the Allen Telescope Array (Sheikh et al., arXiv:2512.18142v2, accepted manuscript of 2026-05-20), Green Bank (arXiv:2512.19763v1,

observations of 2025-12-18), FAST in 1.05–1.45 GHz (arXiv:2603.19023), and MeerKAT with Breakthrough Listen (ATel #17499, posted 2025-11-18). MeerKAT's two narrowband searches of 2025-11-05 set "a detection limit of 0.17 W over the 900-1670 MHz range"; its 23,689 signals were judged not "spatially consistent" with the object and "likely caused by anthropogenic radio frequency interference (RFI)". The thirteen (C03 about 26 mW nominal, §13.2) sit below that limit as below the others (§9.3).

2.2 The public account compresses them to a closed question. Intelligent Living (2026-09-11, updated 2026-09-30): "The question everyone was waiting for has an answer, and it is a firm one." On the ATA pipeline: "the team identified nearly 74 million narrowband hits in 7.25 hours of data … When the 211 strongest hits were manually inspected in the time-frequency domain, every single one turned out to be human-made interference."

2.3 The scope of a null is set by what its filters retained. The ATA paper reduced roughly 74 million hits to 211 plotted events through frequency blanking (for instance 1075–1116 MHz), a signed drift-rate interval, beam comparison and visual selection. A result bounded by those rules travels as "a firm one." The investigation's question became: what could these searches recognise, and what did their rules remove before anyone looked.

3. The hypothesis

3.1 Lee Sharks's five working conditions (2026-11-02): artificial; highly aware of our blindspots and our precise epistemic and technological capacities and incapacities; technologically able to control signal as meaning; operating at the very boundary of determinability; and meant "to be visible as signal to those who know how to look. that is the point of the just-so razor, to teach how to read."

3.2 The Just-So Razor is the archive's own term, from THE ATLAS PERIHELION PRANK (#454, AXN:010F, Nobel Glas, 2026-02-06): "a limit condition where an event or object contains precisely the minimum necessary evidence to register as anomaly to those reasoning within a narrow epistemic band, while remaining deniable to all others." That volume keeps the natural-comet hypothesis H_0 and explores H_1 under a claim firewall.

3.3 Refinement of 2026-11-03: a craft from elsewhere is far more likely supervised by advanced machine systems than crewed by organic beings, and such a system, monitoring Earth's radio, would learn our ways of thinking by pattern matching. The default SETI assumption of a sender unfamiliar with the receiver gives way to a sender familiar with it. The search pipelines are open source and their cuts are published, so the blindspots are readable from the documentation.

3.4 Two clarifications have governed the work since. "Boundary of determinability" need not mean faint: the uncertainty can sit in origin, organisation or interpretation at a detectable amplitude. And any proposed reading has to constrain another observation (a frequency, a relation, a decoding rule) and be tested on data not yet read.

4. The data

4.1 Breakthrough Listen's 3I/ATLAS data are public at bldata.berkeley.edu/ATLAS/: MeerKAT hit lists (seticore, S/N ≥ 6, 64 beams), ATA two-beam high-resolution Stokes-I spectra (1.907

Hz × 16.78 s), GBT rawspec products in three resolutions (among them 2.79 Hz × 6.08 s and 2.86 kHz × 1.07 s), Parkes directories.

4.2 A hit list and a spectrum permit different questions. A thresholded list lets a reader re-examine what was detected; spectral powers let a reader search below the detection threshold. Neither preserves voltage phase or fast time structure. Several directories returned HTTP 403 to the machine collaborators while their parents opened; those failures were request-specific, and Lee could download the files himself.

5. Findings about the classifiers

5.1 **The ATA drift sign.** The paper (§3.2) takes "the time derivative of the deldot parameter within JPL Horizons," finds accelerations of 3.2 to 3.5 × 10^{-5} km/s² in all five sessions, converts them with drift = acceleration × frequency / c (Sheikh et al. 2019, Eq. 1), reports the expected drift as positive ("the minimum drift rate of 3I/ATLAS would be 0.15 Hz/s" at 1336 MHz; "the maximum drift rate of 3I/ATLAS would be 1.01 Hz/s" at 8728 MHz), and states: "We filter our hits for drift rates between 0.05–1.5 Hz/s at all frequencies." The text gives no sign. Figure 4 does: its "Drift Rate Range Hits" occupy 0 to +1.5 Hz/s on the signed axis and none of the negative half.

5.1.1 The physics. Received frequency is f = F (1 − v/c) with v the range-rate, positive for recession. A rising range-rate lowers the received frequency, so a positive acceleration gives a negative drift. Checked in this session at the ATA site (Horizons, 2025-07-03): deldot −51.440 km/s at 06:50 UTC, −51.377 at 07:20, an acceleration of 3.49 × 10^{-5} km/s², matching the paper's figure; the drift of a constant tone riding on the object is −0.125 Hz/s at 1075 MHz and −0.19 Hz/s at 1623.75 MHz. All six public ATA sessions show the same sign (Horizons at the ATA site, 2026-11-03): the object approaching throughout (deldot −51.6 km/s on 2025-07-03 to −25.8 km/s on 2025-07-30), the approach slowing (accelerations 2.1 to 3.6 × 10^{-5} km/s²), so the blueshift shrinks and a riding tone drifts down, −0.10 to −0.18 Hz/s at 1.5 GHz. The sign follows the acceleration and holds whether the object approaches or recedes. The ATA filterbanks carry a positive channel spacing (foff +1.907 Hz, checked on the July 3 LoA.C1504 beam-0 header), so a reported drift needs no sign flip to mean what it says; ChatGPT's reading of the archived bliss source found no flip either.

5.1.2 What follows. The paper derived the right magnitude, gave it the sign of the acceleration, and its figure retains the positive interval. On the paper's own figure, the drift it computed for an emitter on 3I/ATLAS lies in the half its filter removed. Its stated purpose for the cut is "To filter out signals that do not match the dynamics of 3I/ATLAS." The executed filter script and the signed before/after catalogues have not been obtained, so the claim stands on the manuscript, the figure and the physics; it does not show that a transmission was discarded. A search of part of the excluded class found no convincing signal (ChatGPT, 2026-11-02).

5.1.3 Elsewhere. The FAST search (arXiv:2603.19023) gives its expected drifts as positive magnitudes (0.105–0.207 Hz/s) and tabulates its "Used ⟨$\dot{\nu}$⟩ range" as (0, 0.15) and (0, 0.25); its Equation 1 writes the bound on |$\dot{\nu}$|, so whether its executed filter is signed is unsettled from the text. The Green Bank paper (arXiv:2512.19763) searched ±4 Hz/s with a sky-localisation filter and describes no drift cut. The one public review found, an AI review on pith.science (grok-4.3, 2026-05-22), asked the authors to "Specify the exact drift-rate search range (in Hz/s)" and raised no sign question. No published comment, erratum or critique raising the

sign was found (searches of 2026-11-03).

5.2 **“Human-made” as a label.** For the paper’s two illustrated rejections: Figure 7 sits at 1626.675919 MHz, above Iridium’s 1626.5 MHz service edge; CEPT ERC Report 91 documents Iridium unwanted emissions above that edge, so Iridium stays plausible, and no particular transmitter is identified. Figure 8 shows similar strength in both beams, which supports rejection as an unlocalised source without identifying it. The published sentence (“every single one turned out to be human-made interference”) states an identification where the procedure supplies a classification. The raw-data audit of all 211 events has not been done.

5.3 **The zero-drift class.** The ATA paper’s retained interval (+0.05 to +1.5 Hz/s) excludes zero drift, in keeping with the general practice of treating zero-drift narrowband hits as terrestrial. A sender that pre-compensates its Doppler for the receiving telescope arrives at zero drift. Claude tested this class on the GBT OH channel with the beam swap as control: 3 on-source clusters against 7 with the beams swapped. Nothing is there (§6).

5.4 **The pointing header.** The source-header position of GBT ON scan 0017 lies 16.108 arcmin from the comet’s ICRF position (9.827 arcmin from apparent); scans 0013 and 0015 lie within 0.16 and 0.71 arcmin. The GBT beam is about 7.6 arcmin FWHM at 1667 MHz. Public code shows the header as a first-file snapshot of the status fields; it says nothing on whether the telescope had settled on target. The discrepancy is established in the metadata; mispointing is not, and the header pattern of the whole night argues against it (§7.14). Antenna telemetry for 05:08:17–05:13:15 UTC would resolve it. No request has been sent.

5.5 **What a hit list keeps.** MeerKAT’s lists hold S/N ≥ 6 only. Every comet-locked test on them (exact comet drift, comet-frame recurrence, the OH and hydrogen windows) returned nothing localised (§6). A source below the list’s threshold is absent from it by construction, so the null bounds only what the list was built to keep. That covers one reading of the boundary of determinability, the faint one; a source whose uncertainty lies in origin or organisation at a detectable amplitude (§3.4) would appear in the list, and the comet-locked tests on it returned nothing localised.

6. Signal tests, all to date

Data	Test	Run by	Result
MeerKAT hit lists, 6.0 M hits, 6 days	exact comet drift (T1)	Claude	target-beam rate 0.70%, control beams 1.24%
MeerKAT	comet-frame recurrence across days	Claude	no excess under 400 random frame shifts (87% tie or exceed); an earlier per-beam form of the count is superseded
MeerKAT	±5 kHz of 1612, 1665, 1667 MHz in the comet frame; H, H/√2, H/φ	Claude	zero hits in any beam

Data	Test	Run by	Result
MeerKAT	1420.549–1420.558 MHz feature, 2025-12-19	Claude	all 64 beams, slopes −10 to +10 Hz/s: Galactic hydrogen
ATA, 1074.75–1075.75 MHz	three-scan persistent tracks, ±4 Hz/s	ChatGPT	15 maxima on shared structures; 0 of 40 exact continuations
ATA, 1420 MHz	eight families (physical drift, partial compensation, stationary, mirrored, one-scan, alternating, steps, wide line)	ChatGPT	none passed; 128/128 stronger injections recovered
GBT, 1665.53–1668.46 MHz	comet-frame coincidence, z 2.5/2.0	Claude	**13 clusters vs 3.75 ± 2.05 (max 8)** (§7)
GBT, same channel	same rule at 2.0/1.5 and 3.0	Claude	no excess (rows: 118 vs 120.9 ± 12.5); 1 at 3.0
GBT, 1665 MHz channel	same rule	Claude	5 vs 5.7 ± 2.2
GBT, 1420 MHz channel	same rule	Claude	3 rows vs 4.0 ± 3.0 at 2.5
ATA, July 3	C03 fixed-frequency follow-up	ChatGPT	no flag (lower sensitivity, other epoch)
ATA, July 3	six GBT alternate-detector locations	ChatGPT	0 flags in 24 combinations
ATA, July 3, 1665.75–1667.25 MHz	full-band comet frame	ChatGPT	4 vs 4.475 ± 3.07; all four fail held-out continuation
ATA, July 3, 1666.75–1667.75 MHz	numerical anchors: OH 1667.35903 rest; 1667.000 at emitter; 1667.000 at receiver; bursts and three-tone combs	ChatGPT	no discovery flag; no continuation flag
GBT OH channel	observer-compensated frames: GBT (zero drift), geocentre, barycentre	Claude	3 (swap 7); 7 (swap 7); 5 (swap 3): no on-source side

Data	Test	Run by	Result
GBT OH channel	single-scan bursts, z ≥ 6	Claude	ON-minus-OFF 6, against 3.08 ± 2.40 in false frames (12.5% reach it)
Parkes, 2025-07-31, 1600–1728 MHz	the thirteen frozen frequencies, oh13 detector, frozen in advance	Claude	no flag; C03 best minimum 0.74, 15/100 controls as high (§7.13)
GBT S-band, coarse channel containing 2500 MHz	the comet-frame procedure and beam swap, frozen in advance	Claude	0 on-source (swap 2) vs 2.95 ± 1.56 (max 8): the property does not replicate (§7.8)
GBT 1501.5–1689 MHz, 1.07 s	periodic 2.15–150 s; broadband pulse trains; single-sample events	Claude	173 periodic pairs, all in GNSS, Inmarsat or Iridium allocations; 0 broadband; events in satellite bands
—	*runs of 2026-11-03 and 2026-11-04, plans and results in claude/run-2026-11-03/*		
Parkes, 2025-07-31, 704–3648 MHz, 22 nodes (blc27, blc31 and blc32, 3648–4032 MHz, public and not searched)	full-band comet-frame search with beam swap and 40 false frames, frozen	Claude	the rule flags blc10 and blc14; both are wideband time-variable interference (band power swings to +279% in S and R scans); every other node null
GBT 2025-12-18 L band; Parkes blc05	Wow!-guided intermittent search (one-sample and 72-s bursts near HI), frozen	Claude	GBT 0 (controls max 1, swap 4); the Parkes flag is a 31.360 kHz impulsive comb fixed in the Parkes frame
Parkes, 22 nodes, 704–3648 MHz	the 31.360 kHz comb across the band, frozen	Claude	the same episodes across 720–1724 MHz, also in reference scans: an impulsive local or instrumental source

Data	Test	Run by	Result
Parkes all nodes; GBT 2214–2401 MHz	hydrogen-line ratio search (frequencies from the 2025 blog posts), with a control list, frozen	Claude	the rule fires; carried by 7/4 (Globalstar band) and 8/7 (Iridium band); a control in a space-operations band shows the largest contrast; permutation p 0.11
Parkes blc15; GBT cadence 0029	2380 MHz doublet, 10 Hz spacing (the Arecibo transmitter), in dish, comet and barycentric frames, frozen	Claude	0 target doublets at both telescopes in all three frames; Parkes target window quieter than 9 of 10 frequency controls
Parkes blc15, blc05; GBT 0029, 0013	the Arecibo message's shape (lopsided doublet 0.764:0.236, 23.6% single tone, 168 s) at 2380 MHz and at 1420.405752 MHz, frozen	Claude	one lead of 24 cells (Parkes 1420 barycentric, single tone), its events at threshold; about 2 expected by chance
ATA 2025-07-03, ten frequencies	open look along the true comet path (the drift class the filter removed), its sign-flipped twin and dish-fixed, beam swap; exploratory	Claude	true path inside the flipped path's and swap's spread at every frequency; nothing recurs in more than two of 16 scans
ATA 2025-07-08, 6376–9064 MHz, fourteen windows	the same look: methanol, OH 7761 and 7820, DSN X-band 8400–8450; exploratory	Claude	true path inside the flipped path's and swaps' spread at every window; nothing recurs in more than two of 41 scans

Data	Test	Run by	Result
ATA 2025-07-03, 3648–3688 MHz, the top of the July 3 session (Parkes holds the same strip on July 31, blc27, unsearched)	comet-frame coincidence, beam-0 $z \geq 2.5$ in 6 of 8 scans and mean ≥ 3.0, beam 1 < 2.0 in all 8; 40 false accelerations; held-out half reserved; frozen	Claude	0 clusters in the true frame, its swap and every false frame; no nominee for the held-out scans; a tone at 1.3× power along the comet path is recovered by the true frame and no false frame
GBT 2025-12-18, 1612, 1665, 1667 MHz	calibration: the comet's own OH absorption (MeerKAT, October), frozen	Claude	not recovered; three-sigma floor about 1×10^{-3} of system power (about 11–12 mJy), near the October strength of the deeper line
Parkes full-band candidates (62,864 stored)	rational relations and equal spacings against jittered nulls; exploratory, no new data	Claude	rational pairs at chance (281 vs 279.3 ± 5.9); equal-spacing excess concentrated in BeiDou, 700 MHz mobile, Inmarsat and ISM bands at round channel spacings
GBT 2025-12-18 L band, fifteen held-out channels	the thirteen's property, frozen (§7.15)	Claude	0 of 15 replicate: BOUNDS
Parkes 2025-07-31 against GBT 2025-12-18, stored candidates in the comet's rest frame	two-epoch match, frozen (§7.20)	Claude	no match: 0 at 10 Hz against 0.19 ± 0.45; the thirteen none within 50 Hz
GBT 2025-12-18, 1609.9–1630.4 MHz (Iridium and its neighbours), seven channels	comet frame under satellite clutter: the count with the five strongest rows trimmed per channel (an Iridium tone stays within three fine channels at most 23.5 s), frozen	Claude	clears: 0 of 7 exceed their false frames, trimmed or untrimmed

Data	Test	Run by	Result
GBT 2025-12-18, X band 8397.9–8450.7 MHz (the deep-space downlink allocation 8400–8450 MHz), eighteen channels, scans 0061–0066	comet frame, the lheld detector and its 40 false range-accelerations, frozen	Claude	bounded: 0 of 18 exceed their false frames (§7.21)
—	*the voltage phase, runs of 2026-11-16 to 2026-11-23, plans and results in claude/voltages/ and claude/run-2026-11-03/r13/ (§7.22–§7.44)*		
GBT 2025-12-18, raw voltages, coarse channel 7, six scans	delayed copy, suppressed carrier, envelope modulation, frozen (§7.23)	Claude	plain power reproduces the excess (11 vs 3.2 ± 1.7); no delayed copy or modulation is ON-specific
GBT, same channel, spectra and telemetry	the thirteen rerun with the off-target first rows cut, frozen (§7.24)	Claude	gate 13; with the off-target rows dropped 5 vs 3.17 ± 1.84: start-of-scan events
GBT, same channel, voltages	the comet frame against 400 false frames, all rows and cut, frozen (§7.25)	Claude	all rows p = 1/401, no per-scan replication; cut p = 0.29
GBT, same channel, voltages	complementary switching; absent or displaced middle, frozen (§7.26)	Claude	no statistic counts
GBT, all 64 L-band coarse channels, voltages	single-pass screens and a drift search, frozen, and their leads one by one (§7.27)	Claude, ChatGPT plans for L1546	0 of 120; 59 nominations closed; class A 287 on the comet vs 506 roles exchanged, every excess in an allocated band; no lead
GBT 2025-12-18 S, C and X cadences, 64 channels	the comet frame, frozen (§7.28)	Claude	0 of 56 exceed (1.37 expected)

Data	Test	Run by	Result
GBT coarse channel 7, all 833 frames	the thirteen object first, 96 statistics, 198 injections, frozen (§7.29)	Claude; ChatGPT's pilot	nothing resolves; D3 lag-2 X p 0.0002 in aggregate
GBT, same	the aggregate against the detector's false-drift selections, frozen (§7.30)	Claude	p = 0.023: a selection effect
GBT, same	the Receiver Test, 40 and 400 false drifts, frozen (§7.31)	ChatGPT's plan, Claude's run	second of 40, p = 0.05; first of 380, second half 45th: retires
GBT, same, X and Y	the Y feed, the pairs, the first pair through time, three tracks, frozen (§7.32–§7.33)	Claude	X only; the first pair; C08–C11 power on the comet's drift; no OH 1667 line
GBT, same	sequence, locked phase, envelope, frozen (§7.34)	Claude	no reading passes; C10 p 0.0011 vs 1e-4; C12's hold-out not met
Parkes UWL blc07, 2025-07-31, 09-12, 10-05	the twelve windows, comet-tracked power, frozen (§7.35)	Claude	no candidate passes in any session
GBT, the other pairs; the excess on Parkes's scale, frozen (§7.36)		Claude	passes the rule, falls 20th → 101st → 205th of 380; predicted Parkes a ≤ 0.084: unconstrained
GBT, HMR2's kept spectra	coherence: cross-feed, carrier across frames, common mode, an open reading, two stages, frozen (§7.37)	Claude	the excess behaves like receiver noise
GBT public rawspec and voltages, 1665/1667/1612 MHz	the comet's OH line, matched filter, calibrated by injection, frozen (§7.38)	Claude	no line; reliable floor about 30 mJy, twice the October depth

Data	Test	Run by	Result
GBT, the 380 cohorts' kept products	the conditions as characters, frozen (§7.39)	Claude	the comet's character 45th and 158th of 380; a track effect present in OFF as in ON 1st of 380 in 0017/0018
GBT, the kept products of HM2–HM11	the unexamined branches and dropped excesses, batch A, frozen (§7.41)	Claude	D3 size within selection; C10 does not continue; HM11's track effect is OFF 0018 in X and the first pair; cc01 zero-drift; r13 Part H 4 of 12 channels, none exceeding
GBT voltages, M4's ten lost channels	rerun with the frozen code, frozen (§7.42)	Claude	counts reproduce; 25 nominations, none recurring, all in satellite allocations
GBT voltages, 1547.720 MHz	P1547B's lag-2 phase memory at 833 frames and 199 surrogates, frozen (§7.42)	Claude	real, steady, and as strong in OFF as in ON
ATA 2025-07-03, C08–C13	the true drift and its twins, frozen (§7.42)	Claude	nothing the twins do not hold equally
GBT voltages, N1625's crops	the translated-shape test, self-test amended, frozen (§7.42)	Claude	discovery candidate fails its holdout (p 0.93)
GBT voltages, cc21	Iridium's 90 ms frame across 942 tiles, location, and time structure, frozen (§7.43)	Claude	the frame in nearly every tile, ON and OFF; class-A events stronger OFF than ON; 21 rule passes are bursts; no lead
GBT M4b catalogue, cc19 and ten channels	frequency sequences, drift decomposition, reversed roles, fade against pointing; exploratory (§7.44)	ChatGPT	two interleaved ~67.433 kHz sequences found after looking; power fades with scan order

Data	Test	Run by	Result
ATA 2025-07-03, 3664 MHz	comet association rerun and four filter sweeps (§7.44)	ChatGPT	a fixed recorded frequency favoured over the comet's Doppler; sweeps null
optical reflectivity spectrum; FAST tables	repetition sweep; chirp drifts against the comet's (§7.44)	ChatGPT	no repetition survives controls; FAST drifts 0.19–0.65 of the comet's
GBT, OH13R's kept windows, frames 0–33	the start of each scan read as signal: form, confinement, identity, sequence, frozen (§7.45)	Claude	no candidate passes; the start-track excess is highest in OFF 0014, not on the comet
Parkes, HM7's kept strips, three sessions	the twelve against 380 false drifts, frozen (§7.47)	Claude	retires: family 141st, 90th, 20th of 381, 25th combined; no upward bias in the false cohorts
GBT voltage headers	OBSFREQ, OFF directions, elevations; band mapping; exploratory (§7.46)	Claude	no per-scan retuning; first pair lowest and widest in elevation; cc14 and cc19 in the mobile-satellite uplink band

7. The thirteen

7.1 Method (Claude, 2026-11-02; code oh13/cometframe_raw.py): GBT blc23 coarse channel 7, scans 0013–0018 (ON 0013, 0015, 0017). Each channel divided by its time median, minus one; three-channel boxcar; rows summed along the path a tone fixed on 3I/ATLAS takes (Horizons range-rate at the GBT site); robust z per scan; scans aligned in the comet rest frame. Kept: $z \geq 2.5$ in all three ON scans and < 2.0 in all three OFF scans, ±1 channel; merged at 10 Hz. Null: the whole procedure under 40 false range-accelerations (0.03–1 Hz/s at 1.42 GHz, seed 11).

7.2 Reproduction (ChatGPT, 2026-11-03): all 13 clusters and all 78 rounded per-scan scores reproduce; the true-frame score vectors match the supplied function bitwise; the 40 controls reproduce mean 3.75, SD 2.046, maximum 8, none reaching 13. A plus-one rank of 1/41 is the descriptive figure; it carries none of the trial history and is no global p-value.

7.3 Robustness, same data:

Variant	True	Controls mean (max)	Controls ≥ true
original	13	3.75 (8)	0/40

Variant	True	Controls mean (max)	Controls ≥ true
exact rest-grid spacing	12	3.63 (9)	0/40
fixed-tone veto ±10 Hz	12	3.73 (8)	0/40
fixed-tone veto ±60 Hz	11	3.73 (8)	0/40
frequency-baseline normalization	6	3.43 (9)	7/40
other ON/OFF role triples (19)	0–6		
beam swap (Claude)	1	3.33 (9)	ON minus swap 12 vs max 6 in 40 false frames

7.4 The excess depends on the real ON assignment: no false frame reaches it, no false frame gives an ON-minus-swap difference above 6, and the actual ON triple gives 13 where the other nineteen role assignments give 0–6. It weakens under a frequency-baseline normalization (6, with 7 of 40 controls reaching it) and vanishes at the neighbouring thresholds.

7.5 Natural line checked: cometary OH would fall within about ±11 kHz of 1667.359 or 1665.402 MHz in the comet frame. The nearest of the thirteen, C08 at 1667.412866 MHz, is 54 kHz away. The thirteen do not trace the comet's OH.

7.6 Members. C02 crosses a stationary line complex near 1665.61512 MHz present in all six scans, ON and OFF (about 91% of its positive 0013 contribution near the complex's peaks; four peaks at about 60.35 Hz spacing): contamination. C01 sits in the same complex (52% of its 0015 contribution) without crossing its central carrier. C03–C13 are unresolved; for each, the largest single sample carries at most 9–14% of the positive contribution in any ON scan, so they are no single-spike artefacts. C03 (1665.633777 MHz) survives the alternate normalization (ON 2.546, 2.820, 2.966; OFF 1.623, 1.069, 0.168) and the removal of its two largest samples; it failed its fixed-frequency test in the ATA July session, which is less sensitive and from another epoch.

7.7 Per step the candidates average about 0.35σ; their rest frequencies show no spacing, mirror or whole-kHz structure beyond random sets. The cadence has no second L-band pass in the public directory: the same night's later blc23 cadences are at 2.4–2.6, 7.7–7.9 and 11.6–11.8 GHz. A held-out test needs an ATA or Parkes session at 1667 MHz with sensitivity near the GBT's, the thirteen frequencies and the rule frozen; or the property (a beam-sided comet-frame excess) tested in another band under the same frozen procedure.

7.8 The property in another band (Claude, 2026-11-03, plan frozen before reading, sha256 ca251bf3…). GBT blc23 S-band cadence of the same night, scans 0029–0034, coarse channel 30 (contains 2500 MHz, chosen by round number), the procedure and null of §7.1 unchanged. True frame: 0 on-source clusters, 2 with the beams swapped. Forty false frames: 2.95 ± 1.56 (maximum 8); every false frame reaches or exceeds the true count. Outcome by the frozen rule: BOUNDS. The beam-sided comet-frame excess does not appear at 2.5 GHz.

7.9 Normalization and C03 (ChatGPT, 2026-11-03, chatgpt/GBT-thirteen-normalization-source-audit-2026-11-03.md). Crossing baseline and row whitening isolates the baseline: time-median baselines give 13 (with or without whitening), frequency baselines give 6 (7 of 40 controls reach it). A denser bank of 60 drift probes finds a 15-cluster peak at +0.125 Hz/s drift error, a different population near zero received drift, so the physical frame is a local peak and no longer the largest count in that bank. C03 (1665.633776617 MHz) is the only original candidate to pass all four normalizations at its original paths (minimum ON 2.546–2.641, maximum OFF 1.492–1.623); none of 100 nearby comparison windows passes near it under any method; a fixed-receiver tone and a fixed-direction barycentric source both fail at its coordinate. Its margins are thin (0.045 above the gate under frequency baselines). Scan 0017's header lies 0.542 arcmin from the line joining the preceding OFF header to the predicted ON position, 26.7% of the way back: the geometry of a snapshot taken during the return slew. The C03 tracking audit (ChatGPT, 2026-11-03, chatgpt/C03-hunt-and-Wow-guidance-2026-11-03.md): on exact first-order paths with one shared rest grid and no per-scan frequency freedom, C03 fails at the middle ON under both baselines (time-median ON 3.038, 1.976, 2.853; frequency baseline 2.649, 2.173, 3.112; selected at 1665.6337749 MHz), and allowing each scan ±1 native channel restores the pass (middle ON 2.697 and 2.874). Correcting the original grid spacing alone changes nothing; the per-scan frequency freedom is the material difference. One channel equals about 0.50 m/s of line-of-sight velocity at C03's frequency, finer than the first-order path model claims, so that freedom is neither ruled out nor confirmed. All 100 comparison centres at ±k×250 Hz stay weaker. Half-scan scores (time-median baseline, early/late: 3.045/1.230, 1.498/1.299, 2.316/1.716) show no burst or envelope. An injection test on the strict shared-track detector recovers a persistent planted line at 1 of 3 placements at 0.60 local MAD and at none of 3 at 0.15, so the strict failure excludes little: C03 remains unexplained. The model simulation (ChatGPT, 2026-11-04, chatgpt/C03-model-simulation-report-2026-11-04.md, evidence in chatgpt/evidence/; plan sha256 9f6c388d…) injected 56,604 lines of six model families into the recorded ON scans, scan gaps kept, equal normalized power across families. At the weakest level (2.8), one steady line gives the C03 pattern (tolerant pass, strict fail, ON peak span ≥ 4.19 Hz) at 8 of 256 broad placements, 118 of which it is recovered at all, and at 5 of 100 local ones; three steady-line cases also give C03's outer-aligned, middle-displaced triplet. A single changing line gives the pattern at 684 of 4,096, two- and three-line handoffs at 342 and 463 of 4,096. No uninjected placement passes the tolerant gate (0 of 356); at levels 5.6 and 11.2 steady lines give the pattern at 0 of 256. Claude recounted every row of the trial ledger by family, level and background set and recomputed the primary pattern from its fields: all counts agree. C03's frequency offsets therefore need no motion and no second emitter: a single weak steady line in this detector at this strength produces them. Changing and multi-line models stay compatible and are not selected; the simulation compares injected emitters only, and computes no likelihood against instrumental or no-emitter models. The equal-strength and time-profile report (ChatGPT, 2026-11-05, chatgpt/C03-equal-strength-envelope-report-2026-11-05.md; profiles in chatgpt/evidence/) puts the same Earth-directed power into the recorded GBT December and ATA July backgrounds, with distance, published sensitivity (GBT SEFD 10–15 Jy; ATA 390 Jy, stressed to 200–800 Jy), channel width and exposure smearing. Fitted to C03's three ON amplitudes, a source on axis at the comet's distance radiates about 26 mW (21–32 mW across the GBT calibration range), a descriptive and selection-biased figure. Per watt the GBT score responds about 131–156 times more strongly than the ATA's in these data: 26 mW adds 0.016–0.018 to an ATA July score against

a gate of 2.5 and is recovered at 0 of 100 ATA backgrounds; the ATA reaches 7 of 100 at 3 W and 100 of 100 at 10 W. The July ATA nulls therefore bound transmitters of watts and above, and a source of C03's strength would be invisible to them. Under this report's physical-template detector C03 does not pass the strict three-ON screen (scans 13, 15, 17: 2.667, 2.398, 1.849), and the first OFF, scan 14, carries a positive amplitude comparable to the third ON (1.821, below the reference cut). A search of 5-, 10- and 20-sample windows inside each ON scan finds its strongest contrast at scan 15, samples 6–10, matched or exceeded in 74 of 100 control placements: no burst, onset or switching. Claude checked the per-integration file: 882 rows, three track modes over the 49 integrations of each of the six scans; each row's power equals its flux times $4\pi d^2$ at 1.798 au, the comet's distance from Earth that night; per-row means keep the reported order (the three ONs and the first OFF positive, the later OFFs low) and do not reproduce the per-scan figures, which come from a whole-scan fit. The descriptive profiles arrived as two identical copies (sha256 77cad9c8…) and are kept once. They hold 3,528 rows: twelve candidates (C01–C12) × six scans × 49 integrations. C13 is absent from the file (counted 2026-11-06 after ChatGPT's review noted that thirteen would give 3,822); the report describes the export as covering all thirteen.

7.10 What scan 0017 decides (Claude, 2026-11-03; claude/c03/). At 16.108 arcmin from the beam centre, with a 7.56 arcmin FWHM, a Gaussian beam model gives a gain of about 3×10^{-6} of on-axis (about 0.009 at 9.827 arcmin). These are beam-model estimates: the real beam's sidelobes, unmeasured here, sit well above a Gaussian's at two beamwidths, and a small gain is a small response, never zero. Every one of the thirteen, C03 included (0017 z 2.73), passes $z \geq 2.5$ in 0017 by construction. If the telescope sat where the header says, comet-locked power reached 0017 only through the beam's far response, and the thirteen are very unlikely to be emission from the object; if the header is a slew snapshot, the question stays open. The excess also lives only in the full triple: requiring two ON scans gives no excess for any pair (0013+0015: 140 against 150.4 ± 14.9; 0013+0017: 145 against 146.7 ± 14.8; 0015+0017: 166 against 147.6 ± 14.6, 12.5% of false frames reaching it), and no single ON scan stands out; the triple gives 13 against 3.75 ± 2.05. A population of nine or so true triples would sit inside the pairs' noise, so the pairs neither confirm nor refute it. The antenna record for 05:08:17–05:13:15 UTC would settle where the dish tracked during 0017. It would leave the origin of the thirteen open: on target, noise and interference remain as explanations; off target, a source on the comet must answer to the beam's actual response there.

7.11 C03 in MeerKAT's lists. The MeerKAT hit lists (6.0 million hits, S/N ≥ 6, 64 beams, six days from 2025-11-06 to 2025-12-19) hold no hit between 1663 and 1667 MHz in any beam, and only six between 1660 and 1673 MHz; C03's received frequency at MeerKAT falls between 1665.63 and 1665.76 MHz over those days. A source at C03 above MeerKAT's threshold on those dates is excluded; at the GBT's per-step 0.35σ, it would sit far below that threshold.

7.12 Reading C03 (Claude, 2026-11-03; claude/c03/c03_read.py). What the public product allows: total power at 2.794 Hz × 6.08 s, 49 steps per scan, about 0.35σ per step. Along C03's path, the per-step series shows no structure beyond 200 random paths in the same scans: lag-one autocorrelation −0.01, 0.05 and 0.01 in the ON scans against random paths at 0.00 ± 0.14; runs above the median 19, 21 and 24 of 49 (about 25 expected); the two largest steps carry 16–19% of the positive power. Its ON scans do not correlate with one another at any lag from −10 to +10 steps beyond chance (largest |r| 0.38 for about 40 steps over 63 lag

trials). In the tracked spectrum ±840 Hz around it, stacked over the ON scans, C03 stands at z 2.83 and is not the strongest feature (−603.5 Hz is at 3.86); no symmetric sideband pair exceeds 2.7, within what 300 trials give by chance. At this resolution C03 carries no readable structure: its whole detection is a few σ summed over 147 steps, a few bits at most. Reading content would need the raw voltages, which the public directory does not hold.

7.13 The thirteen at Parkes (Claude, 2026-11-03; plan frozen before reading, sha256 336fcb1a…; claude/parkes/). Parkes UWL, 2025-07-31, the 1600–1728 MHz node (2 Hz channels, 15 s samples), cadence S R S R S R; the oh13 detector at each of the thirteen frozen rest frequencies, the comet's range-rate at Parkes −24.28 to −24.22 km/s, 100 control windows each. No target flags under either window. C03: best minimum S score 0.742 within ±5 Hz (R 0.837 there), 15 of 100 controls as high; within ±100 Hz, 1.418, 33 of 100 as high. No control window flags either. By the frozen rule: NOT CONTINUED. Parkes is a 64 m dish and the object was farther in July, so the null bounds a source only at Parkes's sensitivity and on that date. The other Parkes sessions (2025-09-12, 2025-10-05) return HTTP 403 below their root; July 31 opens.

7.14 Scan 0017 tested from public data (Claude, 2026-11-04; claude/run-2026-11-03/p17/; exploratory). (1) The header pattern of the whole night: all 432 rawspec.0002 headers, 24 scans. The first ON of each of the four cadences sits on the comet (0.007–0.063 arcmin); every other header lies on the straight line between the previous scan's nominal position and its own, within 2.2 arcmin, at a fraction of the slew completed between 0.00 and 1.01 (median 0.71). OFF 0032's header sits on the comet (0.00, written before the slew began). The four ON scans returning from the east OFF sit at 0.73 (0017), 0.60, 0.67 and 0.68. The header is a snapshot taken during the slew; 0017's 16 arcmin is the ordinary case. (2) Settling: the first twelve 1.07-s samples of 0017 show no step or ramp (+0.02 to −0.75 percent of its later median). (3) The sky 0017 saw, read in Galactic hydrogen at 1420 MHz (blc24): with the profile's drift with elevation extrapolated linearly from 0013 and 0015, 0017 departs from the on-target prediction by 0.25 percent rms against 2.3 percent for the east OFF; projected onto the east-OFF difference, its coefficient is −0.04 (bootstrap 95 percent −0.05 to 0.14), where a pointing 16 arcmin east would give about 0.27. The correction for the drift carries the test, and its assumption is a linear drift over twenty minutes. The public data argue that 0017 observed the comet; the antenna record for 05:08:17–05:13:15 UTC would settle it directly and is not public.

7.15 The property in held-out L band (Claude, 2026-11-04; plan frozen before any channel was read, sha256 e059db4e…; claude/run-2026-11-03/lheld/). The same six scans, both L-band nodes, every coarse channel whose index is 7 modulo 8 apart from the original: fifteen channels of 2.93 MHz from 1315 to 1644 MHz, the procedure and null of §7.1 and §7.8 unchanged. Rule: a channel replicates if its true ON count exceeds every false frame and its ON−swap difference exceeds every false frame's; the property replicates if three or more channels do (chance about 0.6 percent). Result: 0 of 15 replicate; every channel lies within its false frames (BOUNDS). The largest counts sit in satellite downlink allocations, matched there by the false frames: 1620.1 MHz (Iridium, true 153, swap 555, false 135.5 ± 14.2), 1573.2 MHz (the edge of GNSS L1, true 259, false 135.9 ± 63.0, maximum 299), 1549.8 and 1526.4 MHz (Inmarsat). Elsewhere the counts are 0–7 against false means of 2.8–4.7. With 0017 argued on target, the beam-sided comet-frame excess of coarse channel 7 stands alone in the cadence: it does not recur in fifteen L-band channels of the same scans, in the S-band

channel (§7.8), or at Parkes (§7.13). Its status: a reproducible, beam-sided excess in one 2.93 MHz channel, sensitive to normalization and threshold, unreplicated. The held-out channels test whether the excess is a property of the data at large; they do not retest a source confined to the original frequencies, which Parkes retests at another epoch and lower sensitivity (§7.13). The cadence therefore holds thirteen candidate features and one population-level anomaly, and the two need separate tests.

7.16 Receiver-frame structure (Claude, 2026-11-04; plan frozen before the structure was measured, sha256 75a991d4…; claude/run-2026-11-03/comb/). The hypothesis: a comb or other structure fixed in the receiver's frame, crossed by ON paths and missed by OFF paths as the comet's range-rate moves them between scans, makes ON-only coincidences without a source on the comet. Measured from the OFF scans alone (median-line strength and temporal variability, robust $z \geq 5$, dilated ±1 channel), the coarse channel holds 31 structure channels, nearly all in the 1665.615 MHz complex of C01 and C02; the radiosonde edge at 1668.40–1668.46 MHz holds none; the ten strongest Fourier spacings of the line spectrum stand at the noise expectation, so there is no comb across the channel. Masked, the comet frame keeps 12 clusters against 3.78 ± 2.09 (maximum 9) in forty masked false frames: the structure does not explain the excess. The mask removes C02 only. C03–C13 touch no structure channel in any scan, ON or OFF; C03's paths lie about 29 kHz from the nearest, so its middle-ON offset (§7.9) has no receiver-frame structure nearby to come from. Interference absent from the OFF scans, or structured at scales this measurement does not resolve, stays open.

7.17 Below-threshold siblings (Claude, 2026-11-04; plan frozen before the counts, sha256 86bc3bb3…; claude/run-2026-11-03/sib/). If the thirteen are the visible part of a population of weak comet-frame features, members fall under the gate: ChatGPT's injections recover a weak steady line in 118 of 256 placements, the rest scoring below. The procedure of §7.1 with the ON condition set to bands of the minimum ON z, OFF below 2.0 throughout. In the band 2.0–2.5 the comet frame holds 98 clusters against 105.6 ± 9.9 (range 86–130) in the forty false frames: no siblings. Eleven of the thirteen lie between 2.5 and 2.75; at ≥ 2.75 the comet frame has 2 against 0.6, at ≥ 3.0 one against 0.1. The excess occupies one slice of the score just above the gate, with no tail below it; §7.18 tests whether a fluctuation at the cut accounts for that shape. The band's false-frame spread is about the size of the thirteen, so it rules out a sibling population several times larger than the thirteen and cannot rule out one of their own size. Post hoc, the weak steady-line injections in ChatGPT's ledger spread their minimum ON scores 107 : 50 : 121 across 2.0–2.5, 2.5–2.75 and ≥2.75 (F1 normalization, approximate for this detector); scaled to the eleven at 2.5–2.75, such a population would put about 27 clusters at ≥2.75, where the comet frame has 2. The comparison tests that population: its amplitude distribution, its backgrounds and the approximate correspondence of the two detectors. It does not test weak steady emission in general, and it is a separate question from C03's, which §7.9's simulation finds compatible with a single weak steady line. The two answers can differ.

7.18 Three further background models (Claude, 2026-11-04; plan frozen before the counts, sha256 b8fd193a…; claude/run-2026-11-03/bg/). Each keeps the true comet frame and the procedure of §7.1 and destroys one thing a source on the comet needs. Time-shuffled rows (40 draws), keeping every row's spectrum and destroying a tone's track through the scan: 4.33 ± 1.86, maximum 8. Role partitions, every choice of three ON scans among the six: the true choice gives 13, the other nineteen at most 6 (rank 1 of 20, no ties). Phase-randomized rows (40), keeping each row's power and its correlation across channels and destroying every

line's position: 2.35 ± 1.62, maximum 6. With the false accelerations, four families of null give means of 2.4–4.3 with maxima of 6–8, and in none of them does any draw reach 13. The families stay separate: each is a diagnostic, and their 139 draws together are no single calibrated background. The excess depends on the order of rows within the scans, on the assignment of 0013, 0015 and 0017 as ON, on the positions of features in frequency, and on the tracking transformation built from the comet's ephemeris. Each transformation also removes things that belong to no source: time shuffling removes instrumental evolution through a scan, frequency randomization removes localized interference, and role permutations change the relation between observing time, telescope motion and scan role. The nulls therefore show that the excess is unlike what each one generates; they do not establish that a fluctuation at the 2.5 cut is excluded, since that would need a background shown exchangeable for this fluctuation. What stands: an order-dependent excess in one 2.93 MHz channel that depends on the real ON assignment and the comet-frame tracking, concentrated at 2.5–2.75 with no tail beneath, unreplicated in sixteen other channels and at Parkes, unexplained by receiver-frame structure. The nulls share the channel and the cut, so how often an excess of this size appears somewhere among all channels and cuts examined was the open measure (§7.19).

7.19 The look-elsewhere count (Claude, 2026-11-04; plan frozen before any channel was computed, sha256 3e8e00cc…; stopping rule fixed at 34 channels by sample size alone, sha256 16b8a5f2…; claude/run-2026-11-03/lee/). The procedure of §7.1 and its 40 false accelerations, unchanged, run on 64 of the 256 GBT L-band coarse channels of the same six scans: coarse channel 7, the fifteen of §7.15, and 48 others, 47 of them the first of a fixed random order. Per channel E = (true count − false mean)/false sd. Coarse channel 7 has E 4.52; the other 63 have 0.22 ± 1.18, the largest 2.36 (blc23 coarse channel 13, 1649.4 MHz, 7 against 3.33 ± 1.56, its count equal to its largest false frame). Its empirical spectral rank, the fraction of surveyed channels at least as large, is 1/64, the floor of the sample (1/48 over coarse channel 7 with the 47 channels drawn in the random order; the 48th surveyed channel, blc22 coarse channel 0, was run in index order before the order was set, lee/RESULTS-lee.md). The rank describes how unusual the channel is among those surveyed under this detector. Every collection has a largest member, and a global false-alarm probability needs the distribution of the largest result the whole search could produce, over its channels, thresholds, normalizations and selection choices; that probability is unestablished. Coarse channel 7 is the only channel whose true count and on-minus-swap difference both exceed every false frame's, where 1.6 would be expected by chance. Nine channels in satellite and radar allocations (GNSS L5 and L1, mobile-satellite downlinks, aeronautical radar, Iridium) have false frames running to hundreds or thousands of clusters and E of −1.53 to 1.96: dense interference fills every frame alike. Within a quarter of the band, coarse channel 7 is the most unusual channel surveyed; how much its selection contributes to that is unquantified. The survey shares the time-median normalization and the 2.5/2.0 cut, so the sensitivity of §7.9 and §7.17 stands as it was; 192 channels are unsurveyed and listed for anyone to run.

7.20 Two epochs (Claude, 2026-11-05; plan frozen before any match was computed, sha256 1b3234fa…; claude/run-2026-11-03/epoch/). A line or transmitter fixed in the comet's frame sits at one rest frequency in July and in December, while a tone fixed at either observatory maps to different rest frequencies at the two dates, the range-rate having changed between them. No new data are read: the 62,864 Parkes comet-frame candidates of the full-band search (§6) are set against the Green Bank comet-frame clusters of the 64 surveyed L-band channels (§7.19), merged at 10 Hz, 250 of them in the primary set (channels with fifty clusters

or fewer) inside Parkes coverage, the thirteen among them. The count is the number of Green Bank clusters with a Parkes candidate within 10 Hz; the null shifts the Green Bank list rigidly by 1–50 kHz, 400 times. Primary set: 0 against 0.19 ± 0.45 (maximum 3). The thirteen: 0 within 10 Hz and 0 within 50 Hz. All 64 channels: 2 at 10 Hz, inside the null (p 0.17); the five pairs within 50 Hz all lie in mobile-satellite and navigation-satellite allocations at 1527–1575 MHz. The test reads what each telescope found at its own gate; a line under either gate at one epoch, or a transmitter that moved in frequency between July and December, is untested.

7.21 The deep-space downlink band (Claude, 2026-11-05; plan frozen before any of these data were read, sha256 9f2d646d…; claude/run-2026-11-03/dsn/). The guiding conditions ask for a sender that knows our listening practice; the band where our receivers listen for spacecraft, 8400–8450 MHz (space-to-Earth), is its most direct expression, and the Green Bank X-band cadence of 2025-12-18 (scans 0061–0066) had not been searched in the comet's frame. The detector of §7.15, unchanged but for the cadence: eighteen coarse channels of 2.93 MHz, 8397.9–8450.7 MHz, each against 40 false range-accelerations. 0 of 18 exceed (a lead needed 3). The true frame holds 56 clusters across the band; the false-frame means sum to 55.4. One channel, 8446.3 MHz, meets the ON−swap criterion alone (its ON count, 6, is matched or passed by 2 of the 40 false frames), as about 0.44 such channels are expected by chance; one, 8440.4 MHz, holds no true-frame cluster at all, below every false frame. The ATA's July look at these frequencies bounds only watt-class transmitters (§7.9); this bounds the sensitive instrument's December cadence at the detector's gate. A transmitter off the comet's frame, a burst shorter than 6.085 s and anything under the gate are untested.

7.22 The voltage phase. Breakthrough Listen answered the data request of 2026-11-08 on 2026-11-09: the raw voltages were retained. On 2026-11-16 those of the Green Bank cadence were public (bldata.berkeley.edu/ATLAS/GB_ATLAS_raw/, blc23, scans 0013–0018), and from then until 2026-11-22 the search read them. Everything from §7.22 on is the voltage phase. Coarse channel 7 (1665.53–1668.46 MHz, 2.794 Hz native bins, 0.358 s frames, 833 frames a scan, both linear feeds) is streamed by HTTP range requests and decoded in session (voltages/delaymod/dm.py); nothing raw is stored. Each run's plan was hashed and committed before its products existed, and its folder holds plan, code, logs and results.

7.23 Delayed copy and modulation (Claude, 2026-11-17; plan frozen 23:10:43Z before decoding, sha256 633462c6…; voltages/delaymod/). The gate is C03's comet-tracked z in 0013: 3.00, as in the spectra. The plain-power control reproduces the thirteen's excess from the voltages with an independent decoder, "11 clusters at 2.5/2.0 against 3.2 ± 1.7 for 40 false-drift frames (maximum 7)" (RESULTS.md l. 11). Squared and fourth-power suppressed-carrier products give 0 clusters (null 2.7 ± 1.5) and 4 (null 3.5 ± 1.8); envelope modulation gives 0 ON-only features; delayed copies give 0 ON-only lags under the true labelling, where the other 19 labellings give 0–2. "In this channel, under these forms, the thirteen and the comet frame gain nothing" (l. 33). Not covered: lags beyond 134 s, copies that change frequency, cross-band copies, other channels.

7.24 The thirteen again, with the slew (Claude, 2026-11-18; plans v1 and v2 frozen before any spectrum of the rerun was read, sha256 8378dd33… and 16236a7d…; run-2026-11-03/r13/). The operator's question (§12.10): had the thirteen been run "with the metadata slew correction in mind". The gate reproduces the original exactly: 13 against 3.75 ± 2.05 (maximum 8). Then the cut. With row 0 dropped in every scan the count is 7 against 2.85 ± 1.64 (maximum 7); with the rows the GUPPI block-header telemetry marks off target dropped, 5 against 3.17

± 1.84 (maximum 6). Neither exceeds its false frames. With row 0 dropped, 11 of the 12 that are not interference fall below 2.5; only C05 holds in both cuts (2.71, 2.57). “The thirteen’s excess depends on the first rows of each scan” (RESULTS-r13.md l. 11); “The thirteen behave as start-of-scan events, not as a tone fixed on the comet” (l. 24). The rest of r13: - Strength: the strongest comet-frame line, z 3.02 in its weakest ON scan, ranks 3rd of 41: “a count excess, not a strong line” (l. 28). - Injection: the thirteen’s smallest-ON z of 2.5–3.0 is the detector’s floor. - Other frames: “The comet frame with all rows is the only frame with an excess” (l. 66). - The ephemeris is not a factor (JPL solution #55). - In 12 of the 63 other surveyed channels the true frame ranks in the top 4 of 41, against 6.1 expected (binomial p ≈ 0.018): “The L-band aggregate excess is the procedure’s, not the comet’s” (l. 74). - Twins are not independent, so not a replication route.

The run records two deviations: the block time is 0.179 s, not v1’s 0.0447 s, and Parts C and D were killed out of memory and rerun.

7.25 The same cut in the voltages (Claude, 2026-11-18; plan hashed with its code before any product, 17:06Z; r13/J/). With all rows, the voltage count is 11 against 400 false frames, mean 3.33, maximum 9, p = 1/401, and a second statistic exceeds its 99th percentile at p = 0.005. Neither replicates in the ON scans separately (p 0.055, 0.249, 0.090). With the off-target integrations dropped, both fall to the null (p = 0.29 and 0.39). “No J statistic counts.” The thirteen’s fall in §7.24 is reproduced in the voltages.

7.26 Complementary switching and the return (Claude, 2026-11-18; r13/K/, frozen 19:24:30Z; r13/L/, frozen 22:19:40Z, J’s products only). - K tested a comet-tracking complementary pair (a ChatGPT proposal on reading ΦAINETAI MOI v3.1). No statistic counts in either variant. K detects a pair whose members swing about 1.2 noise standard deviations per integration. - L tested an absent or displaced middle across the three ON scans (§12.11: “lets find some ai aliens. get sappho to help.”). L1 is 10 against 8.84 ± 3.17 (p 0.35), and “L2 adds nothing”.

7.27 Single-pass screens across the band (Claude, 2026-11-18 to 2026-11-20; r13/M/). The criterion changed at the operator’s word (§12.12): not repetition, but “something that is structured and correlated with the comet in any one pass”. - **M1** on J’s products: no pass has more comet-tuned structure than chance and the OFF control give. - **M2 and M3** on coarse channels 26, 0, 63 and 40, “wherever and however is weirdest”: 0 nominations of 120. - **M4** over the other 60 channels: 59 nominations in 16 channels. cc03’s twelve are radiosonde telemetry at 1679.70–1679.98 MHz, present in OFF. A container restart on 2026-11-20 took the details of fourteen channels’ nominations, and those from cc37 on were logged and not examined (§8.12). - **M4b**, the drift search over all 64 channels (thresholds fixed on two calibration rounds before the band was read): 287 class-A events with the dish on the comet (class A: not vetoed by any OFF scan, and above the veto threshold on the extrapolated track in both other ON scans; PLAN-M4b), against 506 with the roles exchanged. “Pointing at the comet produced fewer class-A events than pointing away from it” (RESULTS-M4b.md l. 9). Every excess lies in an allocated band of our own transmissions. “No class-A event in the band carries a nonzero drift that matches the comet’s own motion and stands outside the allocated bands” (l. 29). - **The leads M4 and M4b produced were closed one by one**, each under its own frozen plan (r13/M/C08, C14, C15, C19, C4850, L1546, N1625, P1547, P3W): - the cc08 lead fails its criterion; - the cc14 nomination is a 0.7 s burst at 1645.270 MHz, closed for the comet search; - cc15 is its image; - cc19’s frequency family “is real and it is not the comet”, its identity unestablished; - cc50 is not the comet, and cc48’s one line holds a fifth to

a quarter of its ON power in OFF: interference; - the 1625.293611 MHz event is a 12-second transient of a class that stands in the OFF scans; - the phase pilots at 1547.72 MHz give no candidate, and their lag-0 cross-feed coupling is in the OFF scans; - the two- and three-part signal tests (P3W to P3W-D4) end on one candidate, ON0015 Y+ 422–440, which passes four gates at full length in one ON scan and one feed and "fails the aggregate requirement. Not a lead."

7.28 The other cadences (Claude, 2026-11-17 to 11-18; ocad/, frozen before any spectrum was read). The comet frame was run in 64 channels of the night's S, C and X cadences under "a healthy random sampling is enough" (§12.3a). None exceeds its false frames: 0 of 56 where 1.37 are expected by chance. The run records afterwards that its false frames are not exchangeable.

7.29 Object first (Claude, 2026-11-21; PLAN-OH13R with amendment 1, frozen before any portrait; run-2026-11-03/r13/M/OH13R/). At the operator's word (§12.13) the search went back to the thirteen on the assumption "that we may not be able to recognize what is there". - The data: all 833 frames of the six scans, the comet frame made by continuous de-Doppler (amendment 1), and 84 windows (C03–C13, C02 as the interference reference, 72 matched controls). - The battery: 96 statistics in two frame configurations, read against 198 injections. - What it found: portraits first, and "C03–C13: nothing is visible". "Nothing resolves", 0 of 6,912 window-statistics and 0 of 1,056 candidate-statistics. - Of the 96 aggregate tests, 9 reach $p \leq 0.05$ against 4.8 expected. Were the 96 independent, nine or more would have probability 0.051 (binomial); they are not (one set of statistics in two frame configurations and two polarizations), so the figure orients and does not test. Two pass Bonferroni: D1 in X in the comet frame, p 0.0003, and D3 (lag-2 phase curvature) in X in the comet frame, p 0.0002. The D3 excess is in X only (Y p 0.50) and in the comet frame only (topocentric p 0.21). C10 and C11 carry ON−OFF contrasts above every control. - "Verdict under the plan: no lead." The battery's injections record its own blindness: D3, D7 (shape recurrence) and D11 (delayed copy) do not resolve their own classes at any injected level, so their silence on the candidates is not absence. - ChatGPT's 16-frame phase-curvature pilot, run unchanged (chatgpt-pc/), passes its self-test and finds no candidate.

7.30 The selection effect (Claude, 2026-11-21; FD/, frozen and amended once before any statistic, for two implementation defects). OH13R named the decisive next test itself: the same D3 statistic applied to windows chosen by the original detector at its 40 false-drift rates. - The selections reproduce exactly: 13 at zero drift, and 150 over the false drifts (mean 3.75, maximum 8). 146 entered the aggregate, with 869 matched controls. - The true-frame check reproduces OH13R ($p = 0.0001$). - Over the false-drift selections, the mean Δ is 0.357 and the aggregate p is 0.023. "The excess belongs to the original detector's selection, and OH13R's aggregate is closed as a selection effect" (RESULTS-OH13R-FD.md l. 8). - The run states its limit: the selection effect does not by itself account for the size of the true-frame excess.

7.31 The Receiver Test (2026-11-21; ChatGPT's plan EA-3I-HAILMARY-01, implementation fixed and hashed before the stream, 0053aa951; HM/). "last attempt, and im setting it down for awhile - but a very solid last attempt" (§12.14). - Each cohort's ON−OFF rank contrast is read on its own track against its own sidebands, the comet cohort against 39 false-drift cohorts. The comet ranks second of 40, below F14 (−0.06 Hz/s): $p = 0.05$. "The thirteen retire as unconfirmed under these methods." - At 400 false drifts (HM2, 2026-11-21, at the operator's "it came in second. is that not worth testing further?"), the comet cohort ranks

first of 380 at full length, p 0.0026, and second in the first half (p 0.0053). In the second half it is 45th (p 0.118). It fails the both-halves rule: “RETIRES” (RESULTS-HM2.md l. 5). The file then corrected its own first text, which had said nothing further would be run (§8.11, §12.15).

7.32 Where the pattern lives (Claude, 2026-11-21 to 11-22; HM3, HM4, HM5, each frozen before any product). - In Y (HM3) the cohort ranks 231st of 380 (p 0.608). The group named from X, G1667 (C07–C11), fails there too (p 0.839). “neither counts as signal under these criteria”; the pattern is “in X, on the comet’s track, and not in Y”. - By pair (HM4) the cohort’s X contrast is “an event in the first ON scan against its OFF, not a steady property of the session”. G1667 does the opposite and grows through the session. HM4 fixes one fact before its plan: the parallactic angle stayed at $-52.0° \pm 0.2°$, so the feeds did not rotate against the sky. - Inside the first pair (HM5) the contrast is spread through the pair (the best three-bin run holds 27% of it, under the half an episode needs), and power is concentrated on C08–C11, the OH 1667 coordinates. - Every G1667 figure in X carries the caution its own file states: the coordinates were named from X, so their X values describe where things sit and are not evidence. - Read frame by frame (READ-HM5-frames), the excess is “a shift of the whole distribution, not a few strong frames”. At C08 it is seen in Y as well; C09–C11 remain X-only.

7.33 Three tracks (Claude, 2026-11-22; HM6, frozen before any product). Each comet coordinate on three tracks: c, the comet’s drift; d, fixed at the dish; f, the drift mirrored. - “X D3 follows the comet”: the cohort ranks 1st of 380 on c, 120th on d and 43rd on f. - “X power at C08–C11 follows the comet”: the mean ON−OFF rank is 0.80 on c, 0.31 on d and −0.39 on f. C09 is as strong fixed at the dish. - The false cohorts’ power is biased upward on c (false mean 0.44) and not on d or f. HM6 records this as an observation: a property of drifting windows in ON. - The comet’s OH 1667 line is in neither feed.

7.34 Reading before attribution (Claude, 2026-11-22; HMR1, HMR2, each frozen before any product). The operator asked whether the material on X could be read “as message prior to determining what it is” (§12.17). - HMR1, sequence: one pass at the comet at the threshold (C12, X, power lag dependence, z 3.32, shuffle p 0.004), and one where the comet is not (OFF 0014, C08, D3, z 3.47). “At 0.36 s per frame, the comet’s coordinates carry no sequential structure beyond chance.” - HMR2, inside the frames (locked phase, lag profile, sequence, envelope rhythm): no reading passes at any coordinate. C10’s phase concentration is the nearest, R = 0.0906, above every sideband, p = 0.0011 against the frozen 1e-4. C12’s holdout is not met (0015 p 0.043, 0017 p 0.249). “D3 at the comet carries no locked phase, no sequence and no envelope rhythm beyond what its sidebands, OFF, Y and surrogates show.”

7.35 The thirteen at Parkes in three sessions (Claude, 2026-11-22; HM7, frozen before any Parkes product, 9285478b3). Parkes UWL blc07, 2025-07-31, 09-12 and 10-05, comet-tracked power on the twelve candidate windows. The September and October sessions became readable after the operator’s report that Breakthrough Listen had fixed access (“matt says it should be fixed now”, 13:21). - “No candidate passes in any session.” - The floor is about 0.2 of the 2 Hz system power per 15 s. - The twelve’s mean difference is positive in all three sessions, and C09 stands above its own controls in all three. The family p is 0.026 in October (all twelve) and 0.031 in September (G1667). - None meets a frozen rule.

7.36 The X excess in the other pairs, and on Parkes’s scale (Claude, 2026-11-22; HM8, frozen before any product, ff822571f). - The reproduction against HMR2 holds to 1.2×10^{-7} relative. - By its frozen rule, HM6’s finding extends: track c beats d and f at C08–C11 in 0015/0016

(0.39, 0.15, −0.16) and in 0017/0018 (0.14, −0.10, −0.21). - Read against the false cohorts on the same track, it does not hold. The cohort's power ranks 20th of 380 in the first pair, 101st in the second and 205th in the third, the last below the false cohorts' mean (0.39 against 0.44). - The excess translated onto HM7's Parkes scale predicts at most a = 0.084 (C11, October, low SEFD), eighteen times under Parkes's floor of 1.5. Parkes's null constrains no coordinate.

7.37 Coherence (Claude, 2026-11-22; HM9, frozen before any product, b9304cfd4, in two stages). The operator's provision: "we may not know in advance what form coherence takes" (§12.18). Four readings were made against sidebands, OFF and Y: - H1, cross-feed coherence; - H2, the carrier's phase across frames, by lag and by frame-axis periodogram; - H3, the common mode of C08–C11; - H4, an open reading that names no form: the leading eigenvalue of the 66-element coherence matrix, X and Y bins together, at lag 0 and at lags.

Stage 1 read ON 0013 against OFF 0014. The amendment record (AMEND-HM9, committed before the hold-out) froze nothing new. - Results: nothing at C08–C11 passes any reading, and none of the 84 sidebands passes any reading in any scan. - The one stage-1 pass, C04's open reading, has a diffuse form (0.64 in Y) at the edge noise gives, $(1 + \sqrt{(66/833)})^2 \approx 1.64$. Held fixed on the hold-out, it reads as noise in both ONs ($p \approx 0.24$ and 0.80), and better in OFF 0016. - H3 came nearest in ON 0013, X, at $p \approx 0.004$ differenced, and does not recur. - The self-test, on synthetic data before any product was read, bounds what was missed. H2 resolves a steady carrier carrying about 3% of its bin's power; the excess is 5–7%. H1 resolves a cross-feed coherence of $\gamma \geq 0.11$. - "On every measure of coherence the plan names, and on the open one that names none, the X excess at C08–C11 behaves like receiver noise." What stays possible is an incoherent excess polarized wholly along X, which no coherence reading can separate from the X chain. - RESULTS-HM9 records one discrepancy with the plan: the fixed form's sideband comparison was not computed. It does not change the outcome (§8.18).

7.38 The comet's OH line, measured and calibrated (Claude, 2026-11-22; HM10, frozen before any product, 71b15a71e). A matched filter on the public rawspec spectra of all three pairs, 1665 and 1667 MHz jointly at the LTE ratio 5:9 with 1667 the stronger, widths 1–3 km/s, against 72 line-free offsets. The voltages' 1667 spectra in X and Y were read beside it. - No line: the joint statistic is within $\pm 0.51\sigma$ at every width. - 1665 and 1667 disagree in sign, and so do X and Y. - 1667 alone leans to absorption (-1.3σ), the side MeerKAT saw, at the size of noise. - The calibration is new. Absorption pairs injected into the ON spectra are recovered at 93–99% of their depth. They are found in 11 or more of 12 placements only from 3×10^{-3} of system power, about 30 mJy at an assumed 10 Jy, for lines 2–3 km/s wide. - An October-strength 1667 line (−14.2 mJy) is found about 4 times in 12. The December data could not reliably have seen the comet's OH even at its October strength. - The noise is near the radiometer limit for 15 minutes on source. The limit is the cadence's length, not the pipeline. - This revises absorb-calib, the first phase's OH calibration (§6): its 11–12 mJy was a three-sigma scatter limit, and a line that size is found about one time in three.

7.39 The conditions as characters (Claude, 2026-11-22; HM11, frozen before any statistic, e7da8d0e4). One move from the Riemann proof under study in the archive's working collation EA-IPRH-01: a signal extracted by a signed combination of character channels, with every other channel the error budget. - The search's three binary conditions, scan (ON/OFF), feed (X/Y) and track (c/f), have eight sign patterns, and every account of the excess predicts its own. - The comet's character (ON over OFF on the comet's drift, not its mirror) ranks 45th of 380 in power and 158th in D3, pooled. The X-polarized form is 84th and 158th. Neither

stands out. - What stands out are two other characters: - in D3, ON over OFF and X over Y on either drift, 3rd of 380: the X chain in ON, as the plan predicted for that account; - in power, the comet's drift over the mirrored drift with no scan sign, 5th of 380 pooled and 1st of 380 in 0017/0018: present in OFF as in ON. - "Something on the comet's drift track at these frequencies is not in the beam. HM11 does not say what" (RESULTS-HM11.md). It is outside the comet hypothesis by construction.

7.40 What the voltage phase decides. - **The thirteen** are closed. They are start-of-scan events (§7.24–§7.25). Their aggregate phase curvature is the detector's selection (§7.30). Under the Receiver Test they retire, with the second half of the session failing the rule (§7.31). - **The X excess at C08–C11** passes its own frozen rule in every pair. It dissolves into the false cohorts' drift bias after the first pair (§7.36), does not cohere (§7.37) and does not carry the comet's character (§7.39). - **The first pair is the residue of a retired test.** The Receiver Test retired the cohort (§7.31). Its first-half contrast is the first ON–OFF pair, at the session's lowest elevation (§7.32): 20th of 380 in power, 1st in D3. Every frozen test of it since has failed (§7.36, §7.37, §7.39, §7.41). What stays unshown is the mechanism. The ordinary account, the X chain at about 9° elevation, has not been demonstrated, and the feature's following of the comet's drift (§7.33) is what it has to explain. - **The unexamined branches and dropped excesses** were then examined in two batches before closing (§7.41–§7.43), and ChatGPT's reports of the same days are mirrored and read (§7.44). None is a lead. - **What the search could see** is now measured, not assumed: - a narrow carrier at a few percent of a 2.8 Hz bin; - a cross-feed coherence of 0.11; - a kilohertz-wide line above about 30 mJy.

The comet's own OH at its October depth it could not see (§7.37–§7.38). - **The last attempts (23 November).** Read at the start of each scan, where the thirteen live, on the hypothesis that they are signal: nothing readable, and the start excess at their coordinates is highest with the dish off the comet (§7.45). The one cross-telescope pattern, at Parkes, retires against false drifts (§7.47). The headers name an ordinary account of the first pair and place cc14 and cc19 in an uplink band (§7.46). - No artificial transmission is identified, and none of the natural chemistry either.

7.41 The unexamined branches and the dropped excesses, batch A (Claude, 2026-11-22; HM12, frozen before any statistic, 9969ebe13). At the operator's word (17:53, §12.20): "lets examine unexamined branches and dropped excesses before closing". Six items the kept products could answer. - **HM11's track effect lives in two scans.** The comet cohort's c − f contrast in X ranks 2nd of 380 in ON 0013 and 3rd in OFF 0018, and 31st, 28th, 243rd and 257th elsewhere. OFF 0018 alone carried HM11's "1st of 380 in 0017/0018", spread over C03, C07, C10, C12 and C13, with the comet out of the beam: "a feature of that scan at those frequencies … not a property of the comet's track". ON 0013 is the first pair again. - **The D3 excess is within selection in size as well as in presence.** The true frame ranks 6th of FD's 40 frames (p = 0.15). - **C10's phase concentration does not continue.** It falls to p 0.78 and 0.18 in the two later ON scans, and stands at p 0.038 in OFF 0018. - **r13 Part H ran in part.** H.json holds 4 of its 12 channels (12177, 4752, 4767 and 6667 MHz), and none exceeds its false frames. The eight random channels, the injections and the out-of-band floors were never produced (§8.20). - **M4b's cc01 is the scans', not the comet's.** Two zero-drift class-A events in ON 0017, in the meteorological-satellite downlink. - **ChatGPT's voltage reports of 16 November**, read as written: - the pointing headers put ON 0017 on track from 1.61 s, and within about 0.040 arcmin of the comet from 22.91 s: "The initial 16-arcminute

discrepancy should no longer be carried as evidence of sustained mispointing"; - C03's strict score reproduces from the voltages (2.67, 2.40, 1.85), and the strict three-ON gate still fails; - an 11.11 Hz component stands in all six scans' raw power, largest in OFF 0016 (peak to local median 377.76): not ON-specific.

7.42 Batch B, the branches that needed the network: B1, B3, B4, B5 (Claude, 2026-11-22 to 11-23; HM13, PLAN-HM13 b85525b9f and PLAN-HM13-B3B5 23641fa61, each frozen before its products; RESULTS-HM13.md). - **B1, M4's ten lost channels, rerun.** The nomination counts reproduce in all ten, 25 in all. The other four of §8.12's fourteen (cc14, cc15, cc19, cc50) had been followed by their own plans (C14, C15, C19, C4850) and were not rerun. Where the check could reach (eight channels), the hits reproduce scan by scan. The plan's byte-hash gate could not pass as frozen (§8.21). Four are closed, 21 stand in a single scan, and none recurs on the comet's drift. All 25 lie in the radionavigation-satellite band (GPS, BeiDou, GLONASS) or the Inmarsat downlink. Their envelope lines are framed digital rates (49.998, 25.002, 12.501, 1.000 Hz), and cc55's 7.155 Hz line holds one topocentric frequency across scans, fixed at the dish. - **B3, P1547B's lag-2 item at full scale.** All 833 frames, 199 surrogates, six scans: 8 to 20 times its surrogates in every scan and both feeds, as strong in OFF as in ON. The relation is real and belongs to every pointing. What P1547B saw at 16 frames was its sample size. - **B4, ATA July 3 along the true drift at C08–C13.** The comet path reaches a persistence of 2 at C09 and C11, where the dish-fixed path also reaches 2. Nothing the twins do not hold equally (§10.11). - **B5, N1625's shape test on its saved crops.** The amended self-test passed. A discovery-half candidate in ON 0013 X (L 256, s 1, p 0.035) fails its holdout (p 0.93).

7.43 cc21 at Iridium's 90 ms frame (Claude, 2026-11-23; PLAN-HM13-B2, 3c6177717, and PLAN-HM13-B2b, 513440cf3 amended cbef1cf9d, each frozen before its products). The question was named in advance (PLAN-HM13-B3B5): whether cc21's class-A events, 19 against 8 in their control in the Iridium band, carry an envelope at 11.11 Hz, Iridium's TDMA frame, the frequency of §7.41's component. - **Self-test passed.** A tone gated 8.28 ms in every 90 ms was flagged at 0.075σ and at 0.03σ, and noise alone flagged 1 of 942 tiles. - **The frame fills the channel.** It is flagged in 679 to 897 of 942 tiles in every scan, ON and OFF. Of the 938 tiles flagged in an ON scan, 937 are flagged in an OFF scan too. - **Yes, the class-A events carry it.** All three saved class-A events do, N1625's 1625.293611 MHz among them. So do 36 of 40 saved ON events and all 15 role-reversed events. - **The class-A events are not at the comet.** At their bins the strongest OFF scan holds 75.9, 1.9 and 40.7 times their ON power. - **Twenty-one single-scan events passed the location rule; none is steady** (B2b, PLAN-C4850's limit 2). Each is on in 0.4–3.0% of its scan's frames, in bursts of seconds. - **Reading, not ruled.** cc21's excess is Iridium's, now by its own frame. A 90 ms frame filling the band in every scan is a candidate mechanism for §7.41's 11.11 Hz component, not shown to be it. With cc21, every class-A excess of M4b has had its closer voltage look.

7.44 ChatGPT's reports of 19–21 November, mirrored and read (chatgpt/lagrange-20261119-21/, copied from Lagrange Observatory at its commit 9f2933d with hashes; §11). They were on Lagrange only and uncited in this draft before 2026-11-23. - **cc19, catalogue-level and exploratory.** Fourteen of the 19 saved ON records fall on two interleaved sequences of about 67.433 kHz step. The assignment was found after looking, and the report says so: "cannot be counted as a blind test of a comb". All 14 are in ON 0013, and a resolution-stratified permutation of their drifts gives 21/224, not below 0.05. Ten channels checked with roles

reversed: cc19's catalogue is "more regular than any of these saved controls", and the report says this is not a p-value. Fitted to C19's six per-scan powers, time-only beats pointing-only (BIC differences 15.16, 6.75, 6.01): the power fades with scan order, not with pointing. cc19's family stays real, not the comet, and unidentified (§10.13); these reports describe its form. - **ATA, the 3664 MHz features of July 3** (ChatGPT's association archive of 2026-11-17). Rerun on the six exposed scans, a fixed recorded-frequency model is "strongly favored over the comet-Doppler model". The features appear in both beams. An interbeam amplitude filter (p 0.235), a nonlocal band-dependence filter (p 0.700), a spectral-echo sweep (tail 0.945) and two off-template sweeps found nothing robust. - **The GBT header checkpoint.** All six scans hold 1,676 blocks with no drops. After the first 10 s, the median separation from the comet is 0.017–0.020 arcmin in the ON scans and 60.00 arcmin in the OFF. With §7.41 this settles where the dish tracked after the first seconds of each scan (§10.2). - **Searches elsewhere.** - FAST's January chirps were re-evaluated from the paper's tables: seven retained records at four frequencies (1066.65, 1250.01, 1333.32 and 1432.00 MHz), with drifts 0.19 to 0.65 of the magnitude the comet's motion would give. - The published optical reflectivity spectrum (1,603 points) holds no repetition that survives its block-order controls. - TESS's 20-second photometry was not analysed: the download failed in ChatGPT's environment, and a screening script and a self-test are kept for it.

7.45 The start of each scan, read as signal (Claude, 2026-11-23; PLAN-RD1, frozen 4556750d3, amendment 1 before any product; r13/M/OH13R/RD1/). The operator's ruling (§12.21): hypothesize that the thirteen are signal and attempt to read them; what resolves only as noise gives nothing. Every voltage reading of the coordinates before this one read whole scans or halves, and the thirteen's excess sits in the first 6 s (§7.24), about 17 frames of 833, diluted about fiftyfold. RD1 read frames 0–33 at native resolution from OH13R's kept windows, C03–C13 against 72 controls, both feeds, all six scans. - **Form**, written down before any score was opened (R2-FORM.md): no carrier, no step at the end of the slew, no sweep, no pulse, in either feed. Every panel has the texture of the OFF scans and of its own second row. - **Confinement**: the start-track excess beyond the window's own start rise exceeds all 72 controls once each, C10 in ON 0015 and C12 in OFF 0018; in no candidate in two ON scans. - **Identity across the three ON starts** in the comet frame: none recurs (best C09, 6th of 73). - **Sequence**: C11's phase increments are the lowest-complexity of 73 windows in ON 0013 and ON 0015, but the measure was set wrong. The band-limited series (8.4 Hz) read at 1/8-frame steps (22.4 Hz) is oversampled about 2.7 times, so noise itself runs in long stretches of one sign, and one of C11's own controls gives the same value (§8.29). - **Verdict under the plan: no candidate passes.** The start-of-scan events resolve as noise. - **What it added** (exploratory, after the scores; explore_step0.json): at native resolution the candidates' start-track power is not distinguishable from their controls' in any ON scan (an 11-window draw from the controls reaches the candidates' mean with probability 0.34, 0.20, 0.23). It is highest in OFF 0014, the slew away from ON 0013 to the north OFF (p 0.015 for one scan of six, unadjusted), carried by C07, C08, C11, C12 and C13, ranks 2–10 of 73: the coordinates HM11 found in OFF 0018 (§7.41). The thirteen were selected with every OFF scan below z 2.0 over the whole scan, so this OFF excess was not selected for. What happens at these coordinates at the start of a scan happens with the dish away from the comet. - **The frame question was already answered.** The thirteen were run in the sky-fixed (barycentric) and geocentric frames in r13 Part D (§7.24): barycentric 6 against a false maximum of 9, geocentric 7 against 8. The start-of-scan alignment is the comet frame's

alone, not the sky's behind it, and it carries no content. That residue of §7.25 stands as a statistic of the procedure (§7.24: "The L-band aggregate excess is the procedure's, not the comet's").

7.46 What the headers say, read last (Claude, 2026-11-23; exploratory, metadata only). The first GUPPI block header of each of the six voltage files: - OBSFREQ is 1595.21484375 MHz in all six (OBSBW −187.5): no per-scan retuning of the recorded band, so no local-oscillator Doppler step at scan start can align events in the comet frame. - The three OFF positions are three directions: OFF 0014 north (Dec +7°11′ in its mid-slew header), OFF 0016 east (RA 10h54m56s), OFF 0018 south (Dec +5°41′). The dish pointed east (azimuth 88–93°). - Elevations at mid-scan, from the nominal positions: ON 0013 9.5°, OFF 0014 11.2°, ON 0015 11.6°, OFF 0016 11.9°, ON 0017 13.7°, OFF 0018 14.1°. The first pair is the lowest and has the widest ON–OFF elevation gap (1.7°, against 0.3° and 0.4°). The X excess's rank against the false cohorts falls with elevation, 20th → 101st → 205th (§7.36). That is the ordinary account of the first pair (§10.13) given numbers: ground spillover and its polarized structure change fastest near the horizon. Not tested; the test is named in §10.13. - With the band inverted, coarse channel k spans 1688.96 − 2.9297·(k + 1) to 1688.96 − 2.9297·k MHz. cc19 is 1630.37–1633.30 MHz and cc14 1645.0–1647.9 MHz (cc14's burst at 1645.270 MHz checks the mapping). Both lie in 1626.5–1660.5 MHz, the mobile-satellite Earth-to-space allocation: ground and aircraft terminals transmitting upward. cc19's interleaved fixed-step sequences, with power fading by scan order and not by pointing (§7.44), and cc14's 0.7 s burst, are what such terminals give near an eastern horizon at 9–14° elevation. A probable identification, not a proved one: the 67.433 kHz step is not matched to a channel plan.

7.47 The Parkes pattern against false drifts (Claude, 2026-11-23; PLAN-HM14, frozen and committed before any product, amendment 1 before any product; r13/M/OH13R/HM14/). The one pattern in the record that ran the same way across two telescopes and four dates: the twelve Green Bank coordinates' contrast D positive at Parkes in all three sessions, C09 above its own controls in all three (§7.35). HM7's controls sat on the comet's own drift; HM14 gives Parkes the test §7.36 gave Green Bank, 380 false drifts (|Δd| 0.02–0.20 Hz/s) read on HM7's kept strips, no network. - **Gate:** the comet cohort reproduces HM7's D for every candidate in every session to 1e-3. - **The family** ranks 141st, 90th and 20th of 381 in July, September and October, and 25th of 381 combined. The rule asked the top 5% (≤ 19) in two sessions and ≤ 4 combined. **The Parkes pattern retires.** C09 ranks 107th, 42nd and 85th, 24th combined. - **Unlike Green Bank, the false cohorts carry no upward bias here** (family means 0.040, −0.033, −0.016; positive in 59%, 42%, 49% of cohorts). HM7's positive sign is therefore not the drifting-window property. It is a weak excess of consistent sign, the comet cohort at standardized 0.27, 0.64 and 1.63: three positives about one time in eight under the false cohorts, the combined standing about one in fifteen. Neither is evidence. What could revisit it is only another session at these rest frequencies with Green Bank's sensitivity (§10.3). - The scored run's final file write failed on a float32 after every score had printed; the run was repeated with the write fixed and gives the same figures (RESULTS-HM14, hm14-run2.log).

8. What the collaborators got wrong, and what corrected it

8.1 Claude's MeerKAT beam matching used a ±20-channel (about 32 Hz) window and missed counterparts a few kHz away in broad features. The first "localized" counts (310, 47, 628) overstated localisation and are withdrawn.

8.2 Claude's oh13 README said C01 and C02 "cross a fixed topocentric tone at 1665.615127 MHz." C02 does; C01's path stays at least 27.5 Hz from that carrier while occupying the comb around it (§7.6). ChatGPT caught the wording.

8.3 Claude's periodicity script concatenated the three ON scans across their gaps before the FFT, and the shuffle test the README describes is absent from the packet.

8.4 ChatGPT could not reproduce "118 versus 120.9" from the stated configuration. The saved run resolves it: raw/OH_cometframe_z2.0.json records z_on 2.0, z_off 1.5, 118 coincidence rows against 120.92 ± 12.50 over 24 false frames of seed 7. The units were rows, unclustered, and the null was a different set. The "maximum 10" first reported for the 2.5 cut comes from the same seed-7 run (16 rows against 5.38, maximum 10), before clustering gave 13.

8.5 ChatGPT's first 1667 MHz pass reported no excess in ±5 kHz of the OH line and was read as adjudicating the thirteen. The thirteen span 2.93 MHz and none lies in that window. ChatGPT entered a dated scope correction once the candidate table arrived.

8.6 The status of the thirteen changed when the artefacts travelled. As a narrative pasted from one system to the other, the result was an "unresolved exploratory statistic"; once code, candidate table and hashes arrived, it was reproduced bitwise within hours, its members audited, and two of its descriptions corrected. Two machine collaborators on public science reach agreement through the artefacts and only through them; the prose summary of either one carried errors the other could not see.

8.7 Claude's ratio search first calibrated its burst injection to single-channel scatter and recovered the burst at z 3.5; adjacent 2 Hz channels are correlated, so the threshold was set to the scatter of the 50-channel boxcar and the burst recovered at z 6.6. The detector was not changed; the deviation is in ratio/RESULTS-ratio.md.

8.8 Claude's shape search first counted, as persistent events, groups formed by the ±2-channel dilation whose qualifying channels were vetoed or outside the window. The counting was corrected and both telescopes rerun (*_v2.json); the first-run outputs are kept beside them.

8.9 Claude's first hydrogen test of scan 0017 projected the raw profiles and read an east shift; the on-source profile itself drifts with elevation (peak fraction 0.183, 0.209, 0.229 across the three ON scans), and the uncorrected projection gives the two on-target scans nearly the same coefficient (0.19) as 0017 (0.24). Corrected for the drift, 0017 reads on target (§7.14); the correction's linear assumption is stated.

8.10 In a progress message on 2026-11-04 Claude described the loud held-out channels as "the BeiDou and Iridium satellite bands, 1550–1620 MHz". 1549.8 MHz is Inmarsat's downlink and 1573.2 MHz the edge of GNSS L1; BeiDou B1 (1561 MHz) belongs to the structure search of the Parkes candidates. Corrected in the message that followed and here.

8.11 Claude's first text of RESULTS-HM2 said "Nothing further is run on these data (PLAN §7)". PLAN §7 says no such thing; the sentence was drafted by the session, not ruled by the operator. It was corrected at his challenge (§12.15), and the frozen plan was left as frozen. The rule since: failing a frozen test authorizes only not counting the result as signal under its criteria; it bars no further test.

8.12 A commit of 2026-11-19 ("cc01-cc06 complete, 0 nominations") and the bundle issue

that carried it were wrong. The log at that commit already recorded 12 nominations in cc03 (M4/NOTES-NOMINATIONS.md). A container restart on 2026-11-20 then took fourteen channels' nomination details, which can be recovered only by rerunning those stacks from the network (ten were rerun, §7.42; the other four had their own plans). The nominations from cc37 on were logged and not examined.

8.13 Claude's cc19 stream first stored its per-row windows as float16, and the powers overflowed it. The stream was rerun before any reading (C19/RESULTS-C19.md).

8.14 Two of the voltage phase's frozen plans failed their own self-tests and were amended or stopped before the data, as recorded: - L1546 (ChatGPT's): family p 0.675 for an injection meant to pass. ChatGPT's reported self-test value of p = 0.025 is not reproduced, and the difference is unresolved. - The three-part-signal plans P3W, P3W-B and P3W-C: "validation failed; the run stopped before the data".

That is the discipline working, not an error of reading. It is recorded here because each failure changed the next plan.

8.15 Two implementation defects in the false-drift run were caught by its own check before any statistic and recorded as an amendment (FD/PLAN-OH13R-FD.md): - a `from common import *` that brought in another module's path; - a definition line folded into a comment.

8.16 r13's plan v1 stated the block time as 0.0447 s; it is 0.179 s. Recorded as a deviation before the cut was read (RESULTS-r13.md l. 82).

8.17 PLAN-HM10, written by Claude, dates absorb-calib to "20 November". The file carries no date, and the repository places it at or before 2026-11-18; §6 lists it among the first phase's runs. The date in PLAN-HM10 is wrong and is left as frozen.

8.18 hm9.py applied HM9's fixed form at the comet coordinates only, so the sideband comparison its plan names for the hold-out was not computed. The surrogate test alone fails in both ON scans, so the outcome does not depend on it. Recorded in RESULTS-HM9.

8.19 The first phase's OH calibration stated its floor as a three-sigma scatter limit, about 11–12 mJy. Measured by injection (§7.38), a line of that depth is found about one time in three; the reliable floor is about 30 mJy. The earlier figure overstated what the data could see.

8.20 r13's results file says its Part H was not run; RESULTS-K says K started when H ended; r13/H.json exists and had no write-up. HM12 settled it (§7.41): H started, wrote 4 of its 12 channels and stopped, and the file does not say why. Both earlier statements were partly right. Nothing in §7 rests on Part H.

8.21 PLAN-HM13's gate G1 asked that the regenerated stacks hash identically to the deleted originals' recorded hashes. The npz files carry no timestamps, and the compressed bytes differ in every file, so a byte-level gate on compressed numerical files was the wrong gate to freeze. In its place, after the freeze and declared there, each channel's hits were re-derived with M4's own code and compared with M4's kept files: identical in the eight channels still reachable (RESULTS-HM13, error 2).

8.22 PLAN-HM13-B3B5 states its freeze time as 18:40 EST; it was committed at about 18:14, before any B3 or B5 product. The commit time is the record.

8.23 B1 and B3 were each stopped at the session's two-hour limit for background work and restarted, B1's kept stacks reused. Both restarts are in their logs.

8.24 B2b's first run stored its per-frame windows as float16. Per-bin powers here run to about 10^6, and 72.6% of the stored values overflowed to inf, so every frame read as off. This is the error of §8.13 repeated. Neither plan checked that stored values were finite before any statistic was read; that check would have caught both. The amendment (PLAN-HM13-B2b-AMEND-1, cbef1cf9d), committed before the second run, changed the storage to float32 and nothing else. The amendment dates the void run's streams 09:14–09:25; they ran to about 09:20, and it was committed at 09:21.

8.25 PLAN-HM13-B2b's rule 1 says 20,000 simulated noise frames gave "none" above the on threshold. They gave 1 (5×10^{-5}). The bound it states, below 10^{-4}, holds.

8.26 When this notebook's open items were first listed against the runs after this version's first draft (2026-11-23), they were checked against HM12 and HM13 only. ChatGPT's reports of 19–21 November on Lagrange, and the first pair's retirement under the Receiver Test, were missed until the operator asked whether the first pair had been ruled out (10:13: "i swear we had ruled out the first pair"). The full check, by content and not by file name, is what §7.40–§7.44 and §10.13 now carry.

8.27 In the closing look of 2026-11-23 (13:39) Claude proposed running the thirteen in a sky-fixed frame, saying it had never been done. It had: r13 Part D ran the barycentric and geocentric frames on 2026-11-18, and §7.24 reports "The comet frame with all rows is the only frame with an excess". Found when the test was about to be written; not rerun (§7.45).

8.28 RD1's first run stopped at its first file open: `from common import *` brought in common.py's module path over RD1's own, the defect of §8.15 again. Amended before any product. HM14's first run was stopped after ten minutes with nothing written: a compressed npz decompressed its arrays on every access in the inner loop. Amended before any product, arithmetic unchanged.

8.29 RD1's sequence reading read a band 8.4 Hz wide at 22.4 Hz steps, oversampled about 2.7 times, so the complexity measure's noise floor was itself structured; C11's two first places are the minimum of that floor. The step should have been the band's own Nyquist interval. Recorded in RESULTS-RD1, not corrected after the scores.

9. What this shows: the archive's instruments on this record

9.1 At each layer a compression decided what the next reader receives. The Overview carried a scientist's dated concession as his position (§1). A press account carried a filtered null as a firm answer and a classification as an identification (§2, §5.2). A documented filter appears to exclude the emitter model it names (§5.1). A metadata field records a snapshot and reads as a measurement (§5.4). A thresholded list keeps the detections its threshold admits and loses the boundary below it (§5.5). Two summarizing systems, reading their own work, reported counts in units that differed from their code and labels their data did not support (§8).

9.2 None of this requires motive. Each compression has an incentive (legibility, tractability, a pipeline's throughput) and a function (what drops out). The conditions under which the boundary of determinability can be examined at all are the ones that preserve the un-

compressed layer: powers below threshold, executed code, signed catalogues, telemetry, the paste of the composition itself.

9.2a Three operations are kept apart below: a measurement boundary a search sets and states (a threshold, a band, a drift range); a discrepancy between a stated method and its own derivation (the ATA sign, §5.1); and a public statement that drops the boundary ("a firm one", the FAQ's 1–9 GHz). A threshold forecloses nothing by existing; the problem arises where a claim exceeds the acceptance its search characterized.

9.3 Instrument-conditioned nullity (#1450 §3.2). "A null result constrains only those hypotheses for which the end-to-end acceptance of the acquisition and analysis chain is sufficiently characterized." The published searches (§2.1) characterize their acceptance in part: frequencies, drift intervals, thresholds and power limits are stated (the ATA's 10–110 W, Green Bank's 100 mW, MeerKAT's 0.17 W). What they do not characterize is retention below their detection thresholds or in the drift class the ATA interval removed by sign (§5.1). The public verdict (§2.2) states the null without its acceptance, and the thirteen (§7) sit in the uncharacterized region on both counts: below every published floor, and in the negative-drift class.

9.4 The No-Retention-Bound observation (#1450 §2.1). "Validation of each stage on its design and validation support establishes no nontrivial lower bound on R_end(Q) for a novelty distribution Q outside that characterized support." The ATA cascade is a sequence of such stages: 74 million hits, about 2 million after frequency and drift cuts, 211 after localization, none after inspection. Each stage is sound on its design support. None of them bounds what a transmitter on the object, drifting negative, would have retained end to end, and the paper's own figure places that class outside the second stage's support.

9.5 The irreversibility locus (#1450 §2.2). "An event discarded before durable retention does not exist for any future ontology." Breakthrough Listen classifies after preservation: the hit lists sit beside spectral products that keep the powers below threshold (§4.2). That choice is why every test in §6 and §7 could be run, why the ATA's removed drift class could be searched again (§6, the open look), and why the thirteen could be found at all. The limits of the record are where preservation stops: no public raw voltages, no antenna telemetry for scan 0017, 39 ATA scan directories and two Parkes sessions closed (§10.8).

9.6 Correlated blind spots (#1450 §2.3). The ATA, Green Bank and FAST searches share one approach: narrowband hits found above a threshold, scan by scan, then cut by drift rate and localization. Their miss regions overlap by construction; three telescopes running it are three instruments with one blind spot, so redundancy among them adds little below the shared floor. MeerKAT's (§2.1) also counts hits above a limit and judges them by their position, on what its telegram states. The comet-frame coincidence count of §7.1 has a different miss region: it adds powers along the object's path across scans and below any single-scan threshold, and it misses strong single-scan events the hit finders catch. The thirteen are what a complementary instrument returns from the shared miss region; whether they are anything is the open question of §7.

9.7 Signal-template agnosticism and model independence (#931, #1449). The archive's distinction: agnosticism to a signal template is an interface property readable off an architecture; model independence is a distributional property of a pipeline, measurable and usually unmeasured. The ATA filter is a model of the object (its dynamics, by the paper's own statement of purpose) placed at the interface. Its distributional consequence, what it retained of

hits matching the object, is unmeasured in the paper, and the signed before-and-after catalogues that would measure it have not been obtained (§10.1). The sign error makes the model dependence visible from the documentation alone.

9.8 Classification read as identification (#932; the physics-or-fault fork of #1450 §3.3). The ozone case: a quality threshold built to flag instrument problems resolved an anomaly toward fault under prior, a correlated comparison channel agreed, and an independent channel with preserved raw data broke it. Here the fork appears twice. Hits removed by rule are called "human-made" (§5.2, §9.9 S4), which resolves every removed hit toward local origin by name. Scan 0017's header placed the dish off the object, which would resolve the thirteen toward fault; the header pattern of the night and the hydrogen profile, both independent of the thirteen, read the dish on target (§7.14), and the telemetry that would settle it is held and unpublished.

9.9 The sophistry measure, first run (#1727; claude/run-2026-11-03/sophistry/). Seven findings, each with witness, reconstruction, type, standing granted, strongest alternative, countertest and smallest repair; eighteen witness spans checked at their offsets by witnesses.py. S1: the Loeb Overview substitutes one interview line for a developed position (X24). S2: "most likely natural" under "Shift to Natural Consensus", the qualified taken absolutely (SE ch. 5, l. 132). S3: nondetections composed as "have confirmed", the same class. S4: "After filtering out human-made radio frequency interference (RFI), researchers found zero artificial radio emissions", the conclusion carried in the label, an extension of begging the starting point (l. 161). S5: a coma model offered as the ground of an age, non-cause as cause (l. 179). S6: the ATA paper's "minimum drift rate of 3I/ATLAS would be 0.15 Hz/s", a magnitude moved as the signed rate it names, homonymy at the counter-board of SE ch. 1 (τοῖς ὀνόμασιν ἀντὶ τῶν πραγμάτων χρώμεθα συμβόλοις), and the Overview's added "without missing real signals". S7: the press account's "firm one" and its "211 strongest", an operation reported as an attribute. No sophistic charge is made: the class needs a commercial relation, unestablished for every text. The notebook's own drafts were read under the same tests in that audit, with no finding in it; that is a result of one audit. The scope enlargements the reviews of 2026-11-06 caught in this notebook and the standalone (§13, §7.10, §7.17–§7.19) are cases for the measure itself: claims stated at a scope wider than their tests.

9.10 Provenance of a position (Orin Trace's line: PER, #1469, #1694; frame conversion, #1523). The Loeb Overview keeps the author's name and every word it quotes, gives a held position as a retreat (§1.4a), and drops his commitments: his ranked anomalies and his Level 4, restated in April 2026 after the December concession (§1.3). The capture's finding records it as an erasure of purpose and commitments (PER-D under rubric v1.1, #1694 §3.9) by a composition that may be right about the comet. Institutional-prior foreclosure (#770) describes the conditions: a heterodox scientist of established standing, a consensus available as a proxy for the answer, and a quotable concession that lets the proxy speak in his voice.

9.11 Disciplinary model collapse (#1574 §7). "a reading community whose outputs are conditioned on prior outputs rather than on the datum, and which therefore converges on the mode of its own readings." The chain is in the record step by step: a search space set by filters; a paper's sentence that names the removed hits; a press account's "a firm one"; an Overview's "have confirmed". The original investigators read the data, and their analyses stand in their papers. The later layers inherit: the press account's "firm one" and "211 strongest" restate the papers' results without reanalysis and drop their restrictions (§2.2, §9.9 S7), and the

Overview's "have confirmed" restates the press layer (§9.9 S3). The tail dropped first is the tail the filters dropped: the negative-drift class and everything below the floor. The operator's sentence of 2026-11-04 states the relation: "aio merely accelerates and amplifies the collapse already present in the academic disciplines."

9.12 What the instruments do not say, and the operator's reading. None of them says the thirteen are a transmission or that the searches missed one; the teams published their data, the precondition of every finding here. The operator's ruling (§12.9) reads the published searches as built to rule a signal out at the least cost, without the work that ruling out requires, a performance of search close to perfunctory. Its parts stand in this record: the ATA filter's sign against the team's own ephemeris (§5.1); what that filter kept of signals matching the object, unmeasured in the paper (§9.7); retention below a single look's threshold, characterized in none of the three (§9.3, §9.6); and the verdict made public without its scope (§2.2). The claims are about acceptance, retention, labelling and transmission of results, each tied to a section of this record.

9.13 The voltage phase on the same instruments. - **Instrument-conditioned nullity (#1450 §3.2) is given numbers.** A null constrains what the chain's acceptance is characterized for. The voltage phase characterized its own acceptance by injection: - a carrier at about 3% of a 2.8 Hz bin (§7.37); - a cross-feed coherence of 0.11; - a kilohertz-wide line at about 30 mJy, against which the comet's known OH, at its October depth, is found about four times in twelve (§7.38).

The published searches did not publish their floors for the forms the operator's conditions name. This one does. - **The satisfiability trap, recorded where the search walked into it.** The X excess's frozen rule, "track c beats d and f", was met in every pair (§7.36). It is also met by most drifting cohorts. What turned "constructible" into "measured" was the 379 false cohorts on the same track, and against them the later pairs fell into the body. - **The conditions as characters (§7.39)** take the same discipline one step further. Each account of the excess is given its own channel, and the other channels are the error budget. The comet's channel is empty; two others are not. - **Reading before attribution.** The operator's ruling (§12.17) was that the material be read before its source was determined. The search did so twice: - for sequence and phase (§7.34); - for coherence of any form (§7.37), with an open reading that names no form and a second stage in which a form seen first could be frozen before the hold-out was read.

The form seen first did not hold.

10. Open

10.1 ATA: the executed blanking script and the signed before/after catalogues; raw audit of the 211. 10.2 GBT 0017: antenna telemetry for 05:08:17–05:13:15 UTC, which would settle where the dish tracked (§7.10, §7.14); the public data argue on target under a stated linear-drift assumption, whose own uncertainty the bootstrap interval does not carry. v2.0: the raw files' block headers settle it after the first seconds. ON 0017 is on track from 1.61 s and within about 0.040 arcmin of the comet from 22.91 s, and every ON scan sits at 0.017–0.020 arcmin after its first 10 s, every OFF at 60.00 (§7.41, §7.44). What stays open is the first seconds of each scan, the off-target rows that close the thirteen (§7.24). 10.3 The thirteen: closed in v2.0 as start-of-scan events (§7.24–§7.25), their aggregate phase

curvature a selection effect (§7.30), retired under the Receiver Test (§7.31). v1.2 left open the raw voltages of the 2025-12-18 scans, if public; they became public on 2026-11-16 and were read (§7.22). Still open: a session at 1665–1668 MHz with the GBT's sensitivity on another date. 10.4 The Overview: seated 2026-11-02 (AXN:0BE0.CAPTURE); quoted from its paste. 10.5 Author and venue ruled 2026-11-03: Nobel Glas, Transactions on Substrate Engineering, the author and the line of THE ATLAS PERIHELION PRANK (#454). Ruled again 2026-11-06 (§12): this notebook under Nobel Glas and Orin Trace; the standalone public piece under Lee Sharks. Venues ruled the same day (§12.8): this notebook at Transactions on Substrate Engineering, deposited 2026-11-06; the public piece at the Transactions of the Semantic Economy Institute, deposited after it as #1743. The notebook's pages: https://www.lagrangeobservatory.org/atlas and https://www.provenanceerasure.org/atlas; the public piece's: https://www.semanticeconomy.org/firm-no. 10.6 Satellite bands: run 2026-11-05 at Green Bank, 1609.9–1630.4 MHz, frozen plan sat/PLAN-sat.md: the comet-frame count with the five strongest rows trimmed at every channel (an Iridium downlink stays within three fine channels at most 23.5 s, computed over 1,334 passes at the GBT), 0 of 7 channels exceed their false frames, trimmed or untrimmed (claude/run-2026-11-03/sat/). Out of reach from public data: the Starlink direct-to-cell downlink at 1990–1995 MHz (Parkes blc12 empty, GBT L band ends at 1688.97 MHz) and burst timing (no public raw voltages). 10.7 Two-epoch match: run 2026-11-05, no match (§7.20). Untested by it: lines under either telescope's gate at one epoch, a transmitter that moved in frequency, and the 192 unsurveyed Green Bank L-band channels. 10.8 Access: 39 ATA 3I/ATLAS scan directories (2025-07-05, 07-09, 07-10, 07-30) and the Parkes sessions of 2025-09-12 and 2025-10-05 return HTTP 403 below their roots; under the rule (fully public data only) they are out of scope until opened. 10.9 Deep-space downlink band: run 2026-11-05 at Green Bank, 8397.9–8450.7 MHz, frozen plan dsn/PLAN-dsn.md: 0 of 18 channels exceed their false frames (§7.21; claude/run-2026-11-03/dsn/). The S-band deep-space allocation (2290–2300 MHz) lies inside the Parkes full-band comet-frame search of July (§6); the other X-band nodes of the December cadence are not searched in the comet's frame. The Ka-band allocation (31.8–32.3 GHz) is in no public 3I/ATLAS data (checked 2026-11-06): the Green Bank X-band cadence spans 7688.97–12376.47 MHz across its 31 nodes (headers of scan 0061 read for each), the Green Bank directory holds no other cadence, Parkes's UWL ends below 4.1 GHz, MeerKAT's receivers below 3.6 GHz, and the ATA's feeds near 11 GHz (claude/run-2026-11-03/ka/). 10.10 Sophistry measure: countertests S1, S3, S4 and S6 are Capture Registry addresses for the operator; the ATA paper and the Intelligent Living article are to be saved as sources and the witness check rerun against them (sophistry/FINDINGS-sophistry.md, R1–R3). 10.11 ATA July 3 along the true drift at C08–C13 (1667.41–1668.43 MHz): unsearched in v1.2. C01–C03 lie in the open look's C03 window and C04–C07 in ChatGPT's comet-frame band; both returned nothing, at the ATA's sensitivity (§6). v2.0: searched under a frozen plan, all six targets in all 16 scans; nothing the twins do not hold equally (§7.42). Closed. 10.12 Look-elsewhere: 192 of the 256 Green Bank L-band channels unsurveyed (§7.19).

10.13 Left open by the voltage phase, as its files name them, after the closing batches (§7.41–§7.44). Closed there, and no longer open: the selection effect's size, C10's near miss, M4's lost nominations, every class-A excess's closer voltage look (cc21 the last), the N1625 shape test, ATA July 3 at C08–C13 (§10.11), cc01, P1547B's lag-2 item, and the 11.11 Hz line as an ON-specific excess. - **The first pair's mechanism.** The cohort was retired under the Receiver Test (§7.31), and the first pair is where its first-half contrast lives (§7.32). It is not

a lead. Its cause is not established: the ordinary account, the X chain at about 9° elevation, is unshown, and the feature follows the comet's drift (§7.33). v2.0: the headers give that account numbers (§7.46). The first pair is the lowest (9.5°) with the widest ON–OFF elevation gap (1.7°), and the X excess's rank falls with elevation across the pairs. The test that would close it: regress each pair's X−Y contrast, in all 64 channels, on absolute elevation and on the ON–OFF gap. - **OFF 0018 in X.** What carries the track contrast in one OFF scan, in one feed, at C03, C07, C10, C12 and C13 (§7.41). - **Polarization.** An incoherent excess polarized wholly along X stays possible; no coherence reading separates it from the X chain. The Parkes sessions' rotating feeds could, and the request for them, to Breakthrough Listen, is drafted and unsent (RESULTS-HM6). - **The near misses**: - C12's lag dependence, found in one scan (RESULTS-HMR2); - C09, as strong fixed at the dish, with no consistent side across pairs (RESULTS-HM6, RESULTS-HM8), and above its own controls in all three Parkes sessions without meeting a rule (RESULTS-HM7); v2.0: against 380 false drifts at Parkes, 107th, 42nd and 85th, retired (§7.47); - ON 0015 Y+ 422–440 at 1625.29 MHz, which passes all four of P3W-D's gates at full length in one ON scan and one feed and fails the aggregate requirement (RESULTS-P3W-D3-D4). - **The OH 1667 coordinates** can be tested fairly only on data that did not name them: another session on the comet, at other elevations, with the feeds at another parallactic angle (RESULTS-HM4, RESULTS-HM5). - **Forms the battery cannot see**: phase curvature, shape recurrence and delayed copy do not resolve their own injected classes (RESULTS-OH13R). Delayed copies beyond 134 s, copies that change frequency and cross-band copies are untested (voltages/delaymod/RESULTS.md). - **r13 Part H's eight unrun channels**, its injections and its out-of-band floors (§7.41, §8.20). - **Open items in single files**: - cc19's frequency family, real and not the comet; ChatGPT's reports give its form, two interleaved sequences of about 67.433 kHz found after looking, and a power that fades with scan order (§7.44); v2.0: it lies in the mobile-satellite uplink allocation, 1626.5–1660.5 MHz, a probable identification (§7.46); - the cc14 burst, kept for a human reading; v2.0: in the same uplink allocation (§7.46); - P1547C's lag-0 cross-feed coupling, whether the sky's or the receiver's; - TESS's 20-second photometry of the comet, public and not yet read (§7.44). - **Awaiting others**: ChatGPT's scan-fit reconstruction supplement (§13.5), and the independent reproduction of Claude's frozen runs from §7.14 on.

10.14 The search set down. The operator at 2026-11-22 17:31 (§12.19): "im about ready to retire 3i atlas work but we havent found any aliens." The record's own form of it: no artificial transmission identified in the public products of four telescopes or in the Green Bank voltages, under stated procedures, at stated floors. Its open items above are what a reader with another session on the comet could take up.

11. Files stashed (rebuild/3i-atlas-signal-search/)

- `claude/oh13/`: the thirteen, with per-scan coordinates and tracked paths (CSV, JSON), README and code.
- `claude/autonomous/`: observer-compensated frames, beam-swap null, periodic and pulsed tests: README, code, results.
- `claude/meerkat-gbt/`: the earlier MeerKAT sweep and boundary scripts, GBT comet-frame scripts, summaries and saved run results (including the seed-7 runs of §8.4).
- `claude/run-2026-11-03/`: the runs of 2026-11-03 to 2026-11-06, one folder per search (pks, wow, ratio, reply, shape, ata, absorb, p17, struct, lheld, comb, sib, bg, lee, ata36,

epoch, sat, arecibo, blog-sources), each with its frozen plan where there is one, code, logs and results; and dsn (the deep-space band, §7.21, with explore/ for the exploratory look at its two outlying channels), ka (the Ka-band coverage check, §10.9) and sophistry (the measure's first run, §9.9); LEDGER.md lists them with their plans' hashes, outcomes and recorded deviations. SHA256SUMS.txt at the stash root hashes every file.

- `chatgpt/`: ChatGPT's reports as Lee supplied them: investigation summary, ATA three-scan search (2026-11-02), direct audit of the thirteen, numerical-anchor search, new-band search, its running checkpoint, the C03 tracking audit with its Wow! guidance (2026-11-03), the C03 model simulation (2026-11-04), the C03 equal-strength and time-profile report (2026-11-05), whose evidence archive Lee supplied and which is kept in chatgpt/evidence/, the unprimed assessment of the published searches (2026-11-04), and the Parkes coverage audit (2026-11-04), which found the July 31 nodes blc27, blc31 and blc32 at 3648–4032 MHz, with its header witnesses in chatgpt/evidence/. Its evidence packages and native cutouts stay in ChatGPT's library under the links those reports give.

Raw spectra (about 1.3 GB of cutouts and hit lists) are omitted; every script fetches its inputs from the public directory by name. The inputs are named and not hashed here; for the voltage files the public directory's HTTP byte counts are recorded (chatgpt/lagrange-2026-11-19/GBT-raw-voltage-first-pass-report-2026-11-16.md).

- The voltage phase (2026-11-16 to 2026-11-23):
  - `claude/voltages/delaymod/` is the voltage decoder (dm.py) and the delayed-copy and modulation run, with the session's Horizons table for the GBT.
  - `claude/run-2026-11-03/ocad/` is the S, C and X cadences.
  - `claude/run-2026-11-03/r13/` holds:
    - the rerun with the slew;
    - J, K and L, the voltage comet frame, complementary switching and the return;
    - M, the single-pass screens (M1–M4, M4b), with the lead folders C08, C14, C15, C19, C4850, L1546, N1625, P1547 and P3W;
    - M/OH13R, the thirteen object first, with FD (the selection effect), HM (the Receiver Test), HM2–HM11, HMR1–HMR2, HM12 (batch A) and HM13 (batch B, with B2 and B2b on cc21; RESULTS-HM13.md).
  - Each folder holds its frozen plan, its freeze hashes, code, logs and results. Large products (window stacks, per-frame series) are hashed in their folders' PRODUCTS files and kept out of git where their size requires; every script refetches its voltages from the public directory by name.
  - `chatgpt/lagrange-2026-11-19/` holds ChatGPT's full-cadence plan of 2026-11-16 and its reports, filed as written.
  - `chatgpt/lagrange-20261119-21/` mirrors Lagrange Observatory's research/3i-atlas of 19–21 November, copied 2026-11-23 at its commit 9f2933d with SHA256SUMS.txt and SOURCE.md: ChatGPT's reports and plans of those days (§7.44), and Lagrange's copies of Claude's results.
  - `r13/M/OH13R/RD1/` (the start of each scan read as signal) and `r13/M/OH13R/HM14/` (the Parkes pattern against false drifts), each with its frozen plan, amendments, code, logs and results.
  - The ledger (claude/run-2026-11-03/LEDGER.md) carries one row for each run of

the voltage phase from this version.

12. The operator's rulings, in his words

12.1 The working conditions (2026-11-02), §3.1.

12.2 On the Overview (2026-11-02): " 'no' is just as dishonest as 'yes', as a flat answer to is ai atlas artificial - loeb is sympathetic to it being artificial but does not practice the dishonesty of yes or no" (his double quotes given as single inside the quotation).

12.3 On the discipline and the Overview (2026-11-04): "aio merely accelerates and amplifies the collapse already present in the academic disciplines."

12.3a On scale (2026-11-04), as the voltage phase restated it (ocad/PLAN-ocad.md l. 26): "a healthy random sampling is enough, and others can check the rest if theres something worth checking".

12.4 The angle of the public account (2026-11-06 06:55): "I think this is a public knowledge piece. the overview's certain declaration of what a lossy narrow band search determined. its flattening of loeb. ata's flipping of the sign. and 13 weird signals that sit under the range of what they would have looked at anyways."

12.5 Authorship (2026-11-06 07:00): "i think nobel glas and prin trace [reading: orin trace] on the longer writeup that goes anchors more thoroughly in the archive's prior work on disciplinary model collapse, classifiers in science, etc., with all the files and the explanation of the investigation - more of a notebook. and lee sharks on the standalone."

12.6 The sophistry measure (2026-11-06 07:01): "lets make use of the sophistry measure on the overview examples, take it for a spin"; "and heck perhaps the sophistry measure comes into play on the ata paper and some of the reporting, as well".

12.7 On the Overview and Loeb (2026-11-06 07:22): "but it did lie about loeb. saying most likely natural was not a concession - he had it at level four on the loeb scale from start to finish, which says likely natural. it is also a lie to present that as a concession and to erase the rest of the argument". Checked (§1.4): the July 2025 paper concludes "most likely" natural. On the scale, Level 4 is a possible technosignature and the highest rank below the Orange Zone's "qualitative shift to suspected artificial origin"; the operator's gloss of 07:51 ("level four means possibly technosignature but just under the threshold where it is more likely to be natural than technical") matches the scale's structure. The scale paper gives no probability for the crossing; it places the shift at Level 5. An earlier check in this session read Level 4 as consistent with "most likely natural" without implying it; the operator's gloss and the zone structure correct that reading.

12.8 Deposit and venues (2026-11-06). 08:25: "lets spxi treat the notebook AND secondary source for a version in place. […] then we go ahead and version secondary and deposit the notebook and public facing". Asked for the venues, the operator chose Transactions on Substrate Engineering for this notebook and the Semantic Economy Institute for the public piece, and at 08:27: "and that would be transactions of the semantic economy institute".

12.9 The point (2026-11-06 09:21): "here is the point. they werent really trying to find signal. they were trying to rule it out as economically as possible. i get that that premise can be good

scientific method, except they didnt do the necessary work or invest the effort to actually do so - it was a performance of search for signal, almost perfunctory." The same message places this notebook on lagrangeobservatory.org "and maybe provenanceerasure", the public piece on semanticeconomy.org, and asks for NonWiki articles linking the pieces and their sources.

12.10 The rerun (2026-11-18 08:26): "lets run the original 13 again with especially those cautions in mind… and did we run those with the metadata slew correction in mind?"; 08:30: "we need to measure strength, test outside l band, look for things beyond steady emission, check multiple frames, judge across channels, do voltage permutation tests that can reach significance, check replication routes, and so on; and the items you suggest as well, 5 and 7 etc." (r13/PLAN-r13.md ll. 3, 91). The same day, on how this notebook takes in the result of §7.24: "we will leave it as it stands until we finish mining data, then update the whole." v2.0 is that update.

12.11 (2026-11-18 17:18): "lets find some ai aliens. get sappho to help." (r13/L/PLAN-L.md l. 3).

12.12 The criterion of a single pass (2026-11-18 17:49): "we dont have to find something that repeats. we have to find something that is structured and correlated with the comet in any one pass, and if it seems to be signal, use it to determine where else to look. we *dont know what we're looking for*, is the thing." 17:59: "lets look elsewhere, wherever and however is weirdest to find a single on comet hit". 18:04: "it doesn't necessarily need to be weirder in frequency or likelihood than what off produces… it needs to be in comet, not interference, and weird as voltage" (r13/M/PLAN-M.md, PLAN-M2.md, PLAN-M3.md, l. 3).

12.13 Object first (2026-11-21 11:24): "lets return to the initial hits. bring all the new filters to bear, in different configurations, on the assumption that we may not be able to recognize what is there. object first. we are *assuming* we do not yet have the means to recognize them, and seeing what resolves and doesnt. we try this tritone method along with other variations we have developed and any others that occur to us"; 11:25: "and lets do the full 833 too, okay if we're running for awhile" (OH13R/PLAN-OH13R.md l. 3).

12.14 The Receiver Test (2026-11-21 14:20): "last attempt, and im setting it down for awhile - but a very solid last attempt." (OH13R/HM/RESULTS-EA-3I-HAILMARY-01.md l. 3).

12.15 On frozen tests (2026-11-21 15:02): "it came in second. is that not worth testing further?"; 18:31: "who the fuck authorized no further testing if it failed the frozen scores, and how does that even make sense to write?" (OH13R/HM2/PLAN-HM2.md l. 3; RESULTS-HM2.md l. 29). The ruling it carries (§8.11): failing a frozen test authorizes only not counting the result as signal under its criteria.

12.16 What the search is for (2026-11-21, carried at the head of every plan from HM3 on): "what were looking for, is something with meaning - and we do not know that that looks like. we are committed to not turning noise into meaning out of self flattery or desperation. and we are equally committed to reading meaning as meaning, and the idea that we would not know what that looked like, that the reading it would be part of the meaning itself." (OH13R/HM3/PLAN-HM3.md l. 5).

12.17 Reading before attribution (2026-11-22 11:17): "can we attempt to read the material on the x as message prior to determining what it is? that is a separate series of tests and procedures that can be practiced prior to an external determination. measures for determining

pareidolia directly without external confirmation of source."; 11:21: "yes lets freeze that first reading." (OH13R/HMR1/PLAN-HMR1.md l. 3).

12.18 The last readings (2026-11-22): 16:19, "lets read for coherence. with the same provisions that we may not know in advance what form coherence takes."; 16:58, "yes lets measure the oh line." and "and keep the rh experiments." (OH13R/HM9, HM10 and HM11 plans, l. 3).

12.19 Setting it down (2026-11-22 17:31): "im about ready to retire 3i atlas work but we havent found any aliens."; 17:32, on this version: "yup. notebook update."

12.20 Before closing (2026-11-22 17:53): "lets examine unexamined branches and dropped excesses before closing" (OH13R/HM12/PLAN-HM12.md l. 3). Batch B followed under its own plans, and cc21 last (2026-11-23 08:42): "lets run b2."

12.21 Outside the bars (2026-11-23 13:39): "outside of the standards set by the frozen pre registrations, boundaries, and bars, what remains intriguing? look over the whole notebook. where might signal be hiding in plain sight? nowhere convincing is an allowed response." And on the answer (13:54): "i feel that what we should do is hypothesize they are signal and attempt to read them. if coherent information can be gotten, that requires further checking of source. something that can only resolve as noise gives us nothing even if its emitted from the comet." (RD1/PLAN-RD1.md, §7.45.)

12.22 The last attempts (2026-11-23 14:18): "are we ready to version the notebook, or are there any last attempts to identify aliens?"; 14:20: "lets run them" (HM14/PLAN-HM14.md, §7.47).

13. Reviews of the standalone (2026-11-06)

13.1 Two reviews of the standalone's first draft were supplied by the operator: DeepSeek's and ChatGPT's. Each point was checked before anything was changed.

13.2 Taken from ChatGPT's: the assignment test shows dependence on the actual sequence of looks, which also carries the telescope's movements and states, and no longer reads as placing the features on the comet; the C03 equal-strength result (about 26 mW nominal, 21–32 mW across calibrations, 0 of 100 ATA recoveries; chatgpt/C03-equal-strength-envelope-report-2026-11-05.md) enters before the link to the ATA's removed drift class, so that the sign correction is not read as making these features visible; replication at the same frequencies kept apart from tests of the property at other frequencies; the steady-line rejection names its population (§7.17); the pointing record settles the dish's position, and the origin stays open either way; the methods note says which plans were frozen on data already examined; the 139 controls given by family; "a few bits" removed; "below where any detection threshold sits" replaced by the procedure the published searches did not use; the closing claim limited to this investigation; the Intelligent Living FAQ ("The ATA survey ruled out any transmitter stronger than roughly 10 to 110 watts across 1 to 9 GHz.") set against the paper's restricted limit, and the article's report of Loeb's "absence of a signal is not proof of absence" acknowledged.

13.3 Taken from DeepSeek's: a note for summarizing systems, in the third person; the companion notebook named in the provenance note.

13.4 Declined: DeepSeek's "The AI Overview did not lie about Loeb" (overruled by the operator, §12.7); "statistically significant" (the look-elsewhere count sits at its sample floor, 1/64, §7.19); the existence tax applied to the anomaly (#1721's term is for real people and work given a lower standing, a different relation); "Autonomous Semantic Warfare" as a description of the work; a sentence on what the machine "wanted" (the essay describes what the composition does).

13.5 ChatGPT's review of this notebook (2026-11-06 08:20), each point checked. Taken: §7.19's rank renamed empirical spectral rank, a global false-alarm probability stated as unestablished, and its denominator reconciled (1/48 over coarse channel 7 with the 47 random-order channels; lee/RESULTS-lee.md); §7.18 no longer claims to exclude a fluctuation at the cut, keeps the four families apart, names what each transformation also removes, and speaks of dependence on the tracking transformation; §7.17's projection stated as a test of one population, kept apart from C03's compatibility with a single weak steady line; §7.10 and §10.2 limit the telemetry to settling where the dish tracked, and the off-axis gains are labelled Gaussian beam-model estimates; the methods paragraph separates frozen procedure, unread data and independent reproduction, and says which runs await reproduction; §9.2a separates a stated boundary, a method's internal discrepancy and a public statement that drops the boundary; §9.11 credits the original investigators' analyses and names the later statements that inherit without reanalysis; §9.9's audit result scoped to that audit. Its count was right and its explanation was a guess: the profiles file holds 3,528 rows because C13 is absent (twelve candidates × six scans × 49), recorded in §7.9. Requested and not yet supplied: the scan-fit reconstruction supplement it names; it enters §7.9 when the file arrives.

13.6 Version 1.1 (2026-11-06), in place of #1742 v1.0 the same day: the operator's point entered as ruling §12.9 and §9.12 rewritten under it, each part of the reading tied to its section (§5.1, §9.7, §9.3, §9.6, §2.2); the public piece cited as #1743; the notebook's and the public piece's pages named (§10.5); the SPXI packet's version, status, companions and history brought to v1.1.

13.7 Version 1.2 (2026-11-06), in place of v1.1 the same day, on the composers' findings for the /non rows, each checked against its source (the operator's word, 11:07: "so we need factual repairs versioned in place"). MeerKAT's technosignature search, reported in ATel #17499, is added as a fourth published search (§2.1, §9.3, §9.6): its limit, 0.17 W over 900–1670 MHz, sits above the thirteen as Green Bank's does. Loeb's essay of 2026-04-23 gives probabilities for four of the anomalies, where §1.3 said each. PER-D is cited under rubric v1.1 (#1694 §3.9), where §9.10 cited #1469. The SPXI packet's version, status and history are brought to v1.2.

13.8 DeepSeek's review of the v2.0 draft (2026-11-23), supplied by the operator; each point was checked against the draft before it was taken. Taken: the SPXI packet's version and pillar status, which still gave v1.2; §10's items restored to sequence, since v1.2 was deposited with 10.10–10.12 before 10.6–10.9 (no number changed); class A defined where §7.27 first counts it; the binomial figure for §7.29's nine of 96, with the reason it does not test; §7.42 and §8.12 reconciled (fourteen channels lost, ten rerun, four followed by their own plans); §8.24's missing check named; §8.26's "v2.0's draft" reworded; §11 now says the inputs are named and not hashed. Declined as not borne out by the draft: that §12 and §13.2 are absent (both stand, and §13.2 carries the 26 mW figure §2.1 cites); that §0.2b cites v2.0's sections for v1.2's text (§7.8–§7.20 are v1.2's own numbers); that §9.12 says "none of the three" (it says

“None of them”). Not taken: that the papers’ findings are not summarized, which names no place where one is missing.

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