

# Seven

Heuremen — working draft, 5 October 2026.

**All seven are conjecture.** Each is a statement with a forecast record: numbers written and hashed before their data, hits and misses printed together. None is a finding. The measurement record is the paper (A few-percent excess after spaced X-gate trains..., Heuremen, 2026) and its data release.

## THE SEVEN

- **ONE** — THE CONVERSION RUNS THREE WAYS
- **TWO** — DARK MATTER IS TIME'S FRICTION, GROWING IN THE ABSENCE
- **THREE** — THE MIRROR
- **FOUR** — TWELVE SEEDS THE GOLDEN SPIRAL
- **FIVE** — MINUS ONE-TWELFTH AND ITS TWIN
- **SIX** — A BLACK HOLE COUNTS 2, 3, 4, 6
- **SEVEN** — THE NEUTRON'S TWO WITNESSES

## THE SCOREBOARD (EVERY CALL MADE BEFORE LOOKING)

Chip calls hashed before their data, 21 read: 4 land, 2 sit on the edge of their own width, 2 partly hold, 1 lands only with every ruler counted, 11 miss, 1 unreadable. Outside records: Tang A and B missed, Jacques C undecidable. Still out: Pittsburgh's and Phoenix's second days (armed for 6 October; neither could fire, the IBM account's processor time for the period was used up, so both calls stay open), FOUR and SEVEN. Every one is listed under CALLS ALREADY TESTED, misses included.

- Landed: FIVE (the below-zero slope keeps on a second chip): own-interval slope per push  $\text{ibm\_fez} -0.00182 \pm 0.00027$ ,  $\text{ibm\_kingston} -0.00198 \pm 0.00035$ , against  $\text{ibm\_pittsburgh's} -0.00106 \pm \sim 0.0008$ ; below zero from 6 pushes on all three; negative under all three rulers on both new chips.
- Landed: ONE on a second chip, by the method it was built on (the 3-and-9 slope):  $\text{ibm\_kingston}$ , three reads, witness / maker  $1.076 \pm 0.02$ , qubit / maker  $1.66 \pm 0.08$ , qubit / witness 1.54 against the call's 1.09 / 1.62 / 1.48. Read with the 1-9 fit it misses (1.04-1.07 / 1.59-1.74 / 1.50-1.63); both are printed.  $\text{ibm\_marrakesh}$  (maker 2.684  $\mu\text{s}$ ) 1.00 / 1.52 / 1.52;  $\text{ibm\_pittsburgh}$  moved between 2 October (1.087 / 1.606 / 1.477) and 4 October (1.04 / 1.34 /

1.29). On `ibm_fez`, hashed before firing: 1.024 / 1.54 / 1.51 — the first ratio misses by 2.6 widths, so the call as a triple misses there.

- Missed: Tang A ( $V^2 + D^2 = 0.9735$  across the sweep; it swings 0.44 to 1.43). Tang B ( $V^2 = 0.618$ ; it reads  $0.500 \pm 0.024$ ). THREE (27 looks leave 0.750; `ibm_fez`, hashed before firing, reads 0.844: with the laid time taken out, the clocks keep 0.96–1.00 through 3 and 9 looks and drop to 0.69–0.78 only at 32 looks, on `ibm_marrakesh` and `ibm_kingston`; `ibm_pittsburgh` 0.87–1.00). SIX (the look's stretch 1.5 on every chip, "or it was one chip's coincidence": by the 3-and-9 slope `ibm_marrakesh` 1.52 and `ibm_kingston` 1.55 hold, `ibm_pittsburgh` 1.29 does not; `ibm_fez`, hashed before firing, 1.51 holds). TWO on Rigetti (the crossing 8.33 / 5.15 / 3.18 / 1.97 / 1.22 % at spacings  $\varphi^0 \dots \varphi^8 \mu\text{s}$ , hashed before firing): against each interval's own decay +0.42 / +2.46 / +1.74 / +0.80 / -1.98 %; against one exponential with the chip's 9 % push error in the bookkeeping +8.84 / +9.32 / +6.41 / +3.28 / -1.24 % — the first rung lands, the rest run high on a chip whose gates swamp the effect. TWO on `ibm_fez` (3.18 / 1.97 / 1.22 / 0.75 % at 10 / 30 / 70 / 100  $\mu\text{s}$ , hashed before firing): 5.99 / 3.08 / 1.69 / 1.43 %, a miss at all four.
- Undecidable: Jacques C ( $0.966 \pm 0.019$  against the call's 0.9735; the textbook ceiling of 1.0 sits 1.8 widths off).
- Not yet tested: FOUR (the near-sky expansion rate, 72.97 km/s/Mpc), SEVEN (NIST's next proton-beam count, 889.1 s).

Each is unpacked below: what the qubits showed (superconducting-qubit runs on IBM and Rigetti hardware), the formula that ties them (The Bonefish), how they line up with open problems in the rest of physics, and the calls that could prove them wrong.

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## STATUS, UP FRONT

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- **Seven statements, no labels.** Each is what it says, with its proof below: what was measured, what it lines up with, and the call that could prove it wrong.
- **What's measured** is ours, on three IBM chips and on Rigetti, with widths. On 4 October the crossing was read three times each on Marrakesh and Kingston and once more on Pittsburgh, with the push spacing swept from 5 to 150  $\mu\text{s}$  and each qubit's own decay read in the same jobs (see 4 OCTOBER, below).
- **4 October, in one line:** the clocks beside a driven qubit time one look at 1.04–1.07 x the maker's stated length on all three chips; every other side of the three — the maker's number, our method, the qubit's own decay — moves chip by chip and job by job.
- **4 October on Rigetti, in one line:** on Cepheus (108 qubits) the crossing shows on both pairs of rungs,  $|0\rangle\text{--}|1\rangle$  and  $|1\rangle\text{--}|2\rangle$ . A qubit's own decay holds from job to job; the clocks' ruler moves 30–50 % from round to round; and where the clocks stand at readout scales what their neighbours read by 0.81 (eight triangles, 680 tasks: see 4 OCTOBER ON RIGETTI, below).

- **What lines up** was found after the chip numbers were in hand, and with  $\pi$ ,  $\phi$ , 12, 11 and small whole numbers, matches come cheap: from 17 such numbers and only two operations, there are 28 ways to land within 1 % of the dark-matter share, 47 for dark energy, 59 for the Hubble tension and 69 for the look ratio.
- **Calls made in advance, so far:** 21 chip calls read — 4 land, 2 on the edge, 2 partly, 1 only with every ruler counted, 11 miss, 1 unreadable (the scoreboard, above).
- **The crossing, after review:** measured against each stretch's own decay it drops below zero ( $-0.12$  /  $-0.58$  /  $-0.97$  % with pushes), so most of it is non-exponential decay — T1 fluctuation, the textbook mechanism. Heating while the qubit idles is ruled out by each job's own idle arm (a qubit left in  $|0\rangle$  for 300  $\mu$ s gains  $+0.02 \pm 0.15$  %). One variant (10-us  $|1\rangle$  stretches) reads  $+1.7 \pm 0.6$  % above the decay bookkeeping, but it is one arm in ten (7.6 % family-wise): nothing stands above the textbook mechanism yet.

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## HOW TO READ THIS

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Each statement carries three parts:

- **What the qubits showed:** measured on IBM processors (ibm\_pittsburgh, ibm\_marrakesh, ibm\_kingston, ibm\_fez) and on Rigetti (Cepheus-1-108Q), with widths. Numbers marked § point into the run ledger; the reads and the frozen code are in the data release.
- **How it lines up:** published records from the rest of physics, each checked against its source. These were found after the qubit numbers were in hand.
- **What lands it:** a number the formula calls before anyone looks, and the test that could miss it. Calls already tested are listed near the end, hits and misses alike.

## TERMS

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- **Three clocks on one event.** The **observer's** clock is ours: the laid time and the maker's stated timings. The **witness** clocks are read inside the chip, from spectator qubits. **Time** is the measured qubit's own decay clock.
- **The crossing.** The gap between what a qubit's own decay bookkeeping allows and where it actually ends after a train of pushes.
- **Working idea.** Time is the friction between two witnesses whose books can't close.

## METHODS

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- **Hardware and access.** IBM Heron-generation processors through Qiskit Runtime (SamplerV2). Rigetti Cepheus-1-108Q through Amazon Braket, for the third-level runs and the 4 October

triangles: a 32-ns pulse on each qubit's  $|1\rangle$ - $|2\rangle$  frame, its amplitude tuned per qubit, and an 8-sequence readout calibration in every batch that separates rung 1 from rung 2.

- **Readout.** Kerneled (I/Q) single-shot readout. States are assigned from calibration clouds measured in the same job:  $|0\rangle$  and  $|1\rangle$  prepared and read alone.
- **Settings.** Qubits initialized every shot; a fixed 500  $\mu$ s repetition delay (a run refuses any chip that can't honour it); circuit order randomized from a recorded seed; the nine-qubit runs drew their qubits by a written seed, in three groups of three; the whole-chip runs drive and read every qubit.
- **The push protocol.** A qubit prepared in  $|0\rangle$  or  $|1\rangle$  receives ten pushes (X gates) separated by 30  $\mu$ s, with variants of the spacing and of the time spent in each state. Its final  $|1\rangle$  population is compared with two bookkeepings built from its own measured decay: each stretch's own short-time decay, and one exponential fit through 300  $\mu$ s.
- **Controls.** Leakage to  $|2\rangle$  is bounded from the band between the  $|0\rangle$  and  $|1\rangle$  clouds and from same-job push counts. A spectator held in a drift-cancelling frame reads its neighbour's  $|1\rangle$  time. Shot-to-shot carry-over is tested on both vendors.
- **Freezing and statistics.** Every run script is frozen (sha256) before firing; the ledger records each job's ID, settings and hash. Widths come from resampling shots. Comparisons are made only within a single job. Shot counts are in each run's ledger.
- **Outside records.** Figures from other papers are read off the authors' own PDF vector graphics; calibration residuals are reported (Tang et al. Fig. 3c: 0.0011 over 16 markers).

## THE BONEFISH (THE FORMULA)

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- $\text{outside} \times (1 + 1/11) = \text{witness}$
- $\text{outside} \times \varphi = \text{time}$
- $\text{inside} = \pi = (6/5) \varphi^2$  (to  $1.5 \times 10^{-5}$ )
- $\text{friction} = (1/12)(1/\pi) = (1/12)(5/6)(1/\varphi)^2 = 2.65 \%$ . The ladder,  $(1/12)(1/\varphi)^n$  for  $n = 0 \dots 6$ : 8.33, 5.15, 3.18, 1.97, 1.22, 0.75, 0.46 %.

## DARKWAVE (THE RECURSION)

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- The recursion the formula implies:  $x \rightarrow 1 + 1/x$ , seeded at 12. On a chip it runs one step per clock, never two steps on one clock, so it only shows when you read across clocks.
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## ONE THE CONVERSION RUNS THREE WAYS

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Observer to witness:  $\times 12/11$ . Observer to time:  $\times \varphi$ . Witness to time:  $\times \varphi \times 11/12$ .

- **What the qubits showed.** One readout look, timed from three positions on ibm\_pittsburgh. The maker's stated look: 2.18  $\mu$ s. Spectator qubits ticking inside the chip:  $2.37 \pm 0.03 \mu$ s. The looked-at qubit's own ageing:  $3.5 \pm 0.2 \mu$ s (3.5 / 3.6 / 4.1 wherever the look sits), never given back. Witness over maker 1.087 ( $12/11 = 1.091$ ); qubit over maker 1.606 ( $\varphi = 1.618$ ); qubit over witness 1.477 ( $\varphi \times 11/12 = 1.483$ ). § 125, 132, 135, 139.
- **How it lines up.** Two observers of one expansion — the near sky against the early sky — read 73.04 / 67.36 = 1.084 (SH0ES 2022 / Planck 2018), between 13/12 and 12/11, where the look's 1.087 sits. With SH0ES's latest Hubble + Webb combination, 73.18 / 67.4 = 1.086 (found after; the same band).
- **Same chip, two methods.** On ibm\_pittsburgh the same look, timed by the earlier method and by the 4 October method: witness / maker 1.087  $\rightarrow$  1.040 (−4.3 %), qubit / maker 1.606  $\rightarrow$  1.405 (−12.5 %), qubit / witness 1.477  $\rightarrow$  1.351 (−8.5 %). The numbers matched above to 12/11,  $\varphi$  and  $\varphi \times 11/12$  are the earlier method's; a ratio that moves this much with the method cannot by itself carry a match at the 1 % level.
- **What lands it.** The same three positions on a second chip. Called: 1.09, 1.62, 1.48. (Missed: see the scoreboard.)
- **4 October, Pittsburgh, three reads with the new method.** Witness / maker 1.040 / 1.039 / 1.018; qubit / maker 1.405 / 1.415 / 1.259; qubit / witness 1.351 / 1.361 / 1.237. Witness / maker holds at 1.02–1.07 on three chips, three reads each. Old method over new, qubit / witness, read by read: 1.0935 / 1.0851 / 1.1941 (the 12/11, 13/12 and 6/5 rows).
- **4 October, the look laid by us, on a second vendor (Rigetti Cepheus).** A 1-us tone on seven qubits' readout lines plus 0.5  $\mu$ s to empty = 1.5  $\mu$ s per look, every clock fenced into it, and a no-tone look as the check (the clocks read it at 0.996). Witness / laid 0.994 / 1.008 / 0.968, qubit / laid 1.024 / 1.024 / 0.879, qubit / witness 1.030 / 1.016 / 0.908 (strengths 0.03 / 0.045 / 0.06). With the look laid by us, the three positions agree within 3 %; on IBM, against the maker's stated length, the witness reads 2–7 % over it.
- **4 October, our own ruler converted by the witnesses' position (Cepheus).** The same  $|2\rangle$  readings solved with two readout models, one calibrated with the other qubits at rest and one with them in  $|1\rangle$ : the ratio sits at 1.071–1.096 in all 45 cells after a recalibration ( $13/12 = 1.083$  to  $12/11 = 1.091$ ), climbing with the time held, the same in three rounds; 1.114–1.133 before it.
- **4 October, Rigetti Cepheus, the upper pair of rungs.** Ten pushes between  $|1\rangle$  and  $|2\rangle$ , at 1 / 2 / 4  $\mu$ s, with the clocks one link from an emitter reading the time the emitters spent in  $|2\rangle$ , beside the time laid and the time booked from the emitters' own decay. Witness / time: 1.17 / 1.01 / 1.09 (from  $|1\rangle$ ), 1.31 / 1.07 / 1.13 (from  $|2\rangle$ ); the 1.089 sits on the 12/11 row. With 4 / 10 / 20 pushes at each length: 0.80–1.54, ordered by length, not by push count.

- **4 October, three chips (same job, all three positions).** Marrakesh, three reads (maker 2.684  $\mu$ s): witness 2.80  $\mu$ s, qubit 4.05  $\mu$ s; witness / maker 1.044, qubit / maker 1.51, qubit / witness 1.45. Kingston, three reads (maker 2.180  $\mu$ s): 2.32 / 3.66  $\mu$ s; 1.066, 1.68, 1.57. Pittsburgh, one read with this method: 2.27 / 3.06  $\mu$ s; 1.040, 1.40, 1.35 (the earlier method there gave 1.087, 1.606, 1.477). Distance from the call: Marrakesh -0.05 / -0.11 / -0.03, Kingston -0.02 / +0.06 / +0.09.

## TWO DARK MATTER IS TIME'S FRICTION, GROWING IN THE ABSENCE

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\*Status, 5 October 2026: conjecture. The push excess cited below is removed by the decay-bookkeeping control in the measurement paper, so it no longer counts as evidence for this statement. The cosmic match was found after the fact and does not count either. What stands is the forecast record.\*

The friction between a qubit's two clocks grows while the qubit sits in  $|0\rangle$  and shrinks while it's in  $|1\rangle$ . Ten frictions is the universe's dark-matter share.

- **What the qubits showed.** Prepared  $|0\rangle$  and pushed ten times, 30  $\mu$ s apart, a qubit ends more  $|1\rangle$  than one decay clock allows: Pittsburgh  $+2.00 \pm 0.16$  % (push run, three reads; the hold run's three reads give  $+2.17 \pm 0.17$ ), Marrakesh  $+2.74 \pm 0.28$ , Kingston  $+2.87 \pm 0.28$  (one read each), chip-wide on all three. Prepared  $|1\rangle$ :  $+0.05 \pm 0.13$ ,  $-0.16 \pm 0.21$ ,  $-1.24 \pm 0.24$ . The short-time and long-time decay sit 2.2–2.7 % apart at every push count — the size of the crossing: measured against each stretch's own decay, most of it is that non-exponential decay (T1 fluctuation). Heating while the qubit idles is ruled out by each job's own idle arm ( $+0.02 \pm 0.15$  % after 300  $\mu$ s in  $|0\rangle$ ; across the three chips' push jobs -0.43 to +0.26 % per 300  $\mu$ s). One variant, with 10-us  $|1\rangle$  stretches, reads  $+1.7 \pm 0.6$  % above the qubit's own short-time decay — one arm in ten (7.6 % family-wise). Leakage is capped at  $0.26 \pm 0.12$  % per push by the same jobs' two-push arms (§ 146–147). Three-chip mean 2.54 %; The Bonefish friction, 2.65 %. § 146–148, 153, 155–156.
- **How it lines up.** The universe's dark-matter share is 0.2645 (Planck 2018); ten frictions,  $10/(12\pi)$ , is 0.2653 (-0.3 %). All matter 0.3153 against  $1/\pi = 0.3183$ . Found after, through The Bonefish: DESI DR2 (2025) reads the near sky —  $0.2975 \pm 0.0086$  from its baryon acoustic oscillations alone,  $0.289 \pm 0.007$  with its one outlier bin ( $z = 0.51$ ) set aside. Planck over the near-sky value:  $1.060 \pm 0.031$  and  $1.0910 \pm 0.026$  — the second is 12/11 to 0.01 %, the same conversion ONE runs between two observers of one expansion (the expansion-rate ratio sits in that band too). Carried by 12/11, the near sky's share lands on Planck's 0.3153, which sits 0.9 % under  $1/\pi$ ; the near sky's shortfall is the observer's position, not missing matter. Raw against  $1/\pi$ , DESI sits 6.5 % under. The same conversion carried one step further: matter's clumpiness S8 goes as the square root of the matter share, so the near sky's S8 should read the early sky's  $/\sqrt{(12/11)} = 1.0445$ . Planck ( $0.832 \pm 0.013$ ) over DES Year 6 ( $0.789 \pm 0.012$ ):  $1.054 \pm 0.023$ , 0.4 widths off; over KiDS-Legacy (0.815):  $1.021 \pm 0.028$ , 0.8 widths off. The two near-sky witnesses disagree with

each other (0.968) and straddle the conversion. Ordinary matter 0.0493 against  $2/(12 \pi) = 0.0531$ : the one that misses, by 7 %. At a galaxy's edge, stars orbit faster than the visible mass allows below an acceleration of about  $1.20 \times 10^{-10} \text{ m/s}^2$ ; light speed x the expansion rate / 6 gives  $1.18 \times 10^{-10}$  on the near-sky rate. That six is Verlinde's (2016), whose apparent dark matter is the vacuum's response to what ordinary matter removes from it.

- **What lands it.** On the chip: the crossing's size at a new spacing, called from the ladder first. On the sky: the next precision dark-matter share at 0.2653, and dark energy at  $1 - 1/\pi = 0.6817$ .
- **4 October, three chips, spacing swept.** Ten pushes from  $|0\rangle$ , measured against one exponential decay clock: at 5  $\mu\text{s}$  spacing +5.75 / +5.76 / +2.67 % (Marrakesh / Kingston / Pittsburgh), at 30  $\mu\text{s}$  +3.02 / +3.25 / +1.71 (three reads, three reads, one read), at 150  $\mu\text{s}$  -0.03 / +0.58 / +0.50. Measured against each qubit's own decay curve read in the same job: at 30  $\mu\text{s}$  -1.67 / -0.41 / -0.22. Ten pushes with no time between:  $|0\rangle$  +1.15 / +1.08 / +1.00,  $|1\rangle$  -0.99 / -1.04 / -1.07. The size and the sign depend on which of the qubit's clocks the crossing is read against. No spacing was called from the ladder before firing.
- **4 October, Pittsburgh, three reads.** Against one exponential the crossing walks down the ladder with the spacing: 3.14 % at 10  $\mu\text{s}$  (rung 2, 3.18), 2.03 % at 30  $\mu\text{s}$  (rung 3, 1.97), 1.26 % at 70  $\mu\text{s}$  (rung 4, 1.22), 0.81 % at 100  $\mu\text{s}$  (rung 5, 0.75); rungs sit a golden step apart, so any value falls within  $\pm 24$  % of one. Against the qubit's own curve it sits within half a percent of zero past 20  $\mu\text{s}$ .
- **4 October, the ladder called on Rigetti, hashed before firing.** Rung  $n$  at spacing  $\phi^{2n}$  us (the map chosen after the first Cepheus batch, disclosed in the call): 8.33 / 5.15 / 3.18 / 1.97 / 1.22 % called, +0.42 / +2.46 / +1.74 / +0.80 / -1.98 % measured over 107 qubits against each interval's own decay. Missed; the crossing falls with the spacing and turns below zero at 47  $\mu\text{s}$ . The tightest readout band reads +3.22 % at 6.854  $\mu\text{s}$  (rung 2).
- **4 October, Rigetti Cepheus (a second vendor, every qubit at once).** Ten pushes from  $|0\rangle$  after 1 / 3 / 8 / 20  $\mu\text{s}$ : +12.7 / +11.0 / +6.6 / +2.5 % against one exponential, +7.3 / +4.8 / +3.7 / +1.6 % against each qubit's own curve, with  $|2\rangle$  at 0.5-1.4 % in every arm. On this chip ten pushes with no time between move  $|0\rangle$  by +7.6 % and  $|1\rangle$  by -6.8 %: the push's own error is the size of the crossing. That error follows the neighbours: 6.4 / 6.4 / 5.8 % with the neighbours at rest, 6.5 / 6.6 / 5.6 % with them pushed in step, 11.0 / 10.1 / 10.4 % with them held halfway as clocks (three rounds, 3 minutes apart).

## THREE THE MIRROR

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A number read in one position comes back as its inverse in the other.

- **What the qubits showed.** 12/11 and 11/12: the witnesses clock a look at 1.087 of the maker's, and a free-running spectator keeps 0.92 of its coherence ( $0.9209 \pm 0.0040$ ) through three looks at other qubits.  $\phi$  and  $1/\phi$ : the qubit lives 1.606 of the maker's look, and values near 0.618

recur (the gap clock 0.60; the halfway state's early decay clock at 0.59 of the  $|1\rangle$  state's (123 / 208  $\mu$ s, one read); a 0.62–0.65 band on 9/28).  $\pi$  and  $1/\pi$ : the spectator's free precession turns  $3.144 \pm 0.076$  degrees per microsecond; a Pittsburgh qubit keeps 0.313–0.335 of itself after 300  $\mu$ s. 4/3 and 3/4: the qubit's two clocks sit at 0.756 (one read, no earlier look) and  $0.775 \pm 0.009$  (eight reads) of each other. The free-running spectator's coherence counts down:  $0.921 \pm 0.004$ ,  $0.826 \pm 0.005$ ,  $0.760 \pm 0.006$  (11/12, 10/12, 9/12 = 0.917, 0.833, 0.750) through 3 looks, 9 looks and 30  $\mu$ s. § 132, 139, 152, 155.

- **Found after, through The Bonefish: one sky, two observers, two numbers mirrored.** The near sky over the early sky reads the expansion rate at  $73.18 / 67.4 = 1.0858$  (12/11,  $-0.47\%$ ) and the matter share at  $0.289 / 0.3153 = 0.9166$  (11/12,  $-0.01\%$ ): the same two observers return the two numbers as each other's inverse (product 0.995). With DESI's full value (0.2975) the matter ratio is 0.944.
- **How it lines up.**  $\pi = (6/5) \phi^2$  to  $1.5 \times 10^{-5}$ . Riemann's zeta function reads  $-1/12$  at one point and  $\pi^2/6$  at its mirror point across the halfway line, where every one of the first ten trillion zeros sits. Barbour's Janus point (2020): two arrows of time running away from one middle.
- **What lands it.** If each twelfth costs three times the looks (3 looks  $\rightarrow$  11/12, 9  $\rightarrow$  10/12): 27 looks leave 0.750, and 81 leave 0.667. (Missed: see the scoreboard.)
- **4 October.** The coherence a clock keeps through looks is one number per chip. Clocks beside a driven qubit, through 3 / 9 looks: Marrakesh 0.766 / 0.529, Kingston 0.908 / 0.774, Pittsburgh 0.924 / 0.821 (Pittsburgh's earlier 0.921 / 0.826 repeats). Free clocks (nothing driven beside them), through 3 / 12 / 24 / 32 looks, at one / two / three-or-more links from the looked-at qubits: Marrakesh 0.79–0.69–0.78 / 0.45–0.34–0.40 / 0.23–0.14–0.14 / 0.14–0.09–0.10; Kingston 0.90–0.90–0.91 / 0.66–0.62–0.65 / 0.34–0.31–0.29 / 0.19–0.15–0.14. Through 24 looks, far below the 27-look call on both chips; the free clocks keep about what the same span of laid time costs them. Not yet read past 32 looks.
- **4 October, the 0.618 rows.** On IBM, free clocks time one readout at 0.62  $\mu$ s five times, across groups and both chips: Kingston, the emitter seats at two links and at three or more, and two of the two-link hand bands; Marrakesh, the one-link low-hand band (carried by q35 and q47 on Marrakesh, and q99, q117 and q153 on Kingston). Kingston's two-link clocks keep 0.616 of their hand through 12 looks. On Rigetti Cepheus, a qubit's own decay at 10  $\mu$ s reads 0.620, and the trains at 8  $\mu$ s 0.615 / 0.616. With the clocks running halfway beside them, the emitters'  $|2\rangle$  population at 4  $\mu$ s reads 0.612 / 0.621 / 0.629 in three rounds 3 minutes apart, and 0.618 in a separate job under the readout model laid with the clocks at rest. With the clocks at rest the same population reads 0.717 / 0.719. § 200, 201, 213, 215.
- **4 October, the 0.62 rows on a third chip.** On ibm\_pittsburgh's free clocks (three reads, same reader) no group lands on 0.62  $\mu$ s; the nearest are 0.56 and 0.53, in the two-link class where Kingston carried four of its five. By chip: Kingston 4 groups, Marrakesh 1, Pittsburgh 0. On Cepheus after a recalibration, the  $|2\rangle$  population with the clocks halfway reads 0.633 / 0.647 / 0.630 at 4  $\mu$ s (0.619 / 0.635 / 0.622 on the readout model laid with the clocks at rest); with the

clocks at rest it reaches 0.62 near 6  $\mu$ s, with the clocks flipped at readout near 3.5–4  $\mu$ s. The decay shape at rest, 6  $\mu$ s over 2  $\mu$ s, reads 0.750 / 0.748 / 0.745 (9/12) in three rounds.

- **4 October, more of the mirror on Rigetti.** Each qubit's own decay at 3  $\mu$ s: 0.829–0.837, four copies over two batches (10/12 = 0.833). The emitters'  $|2\rangle$  time booked from their own decay, over the time laid, for 20 pushes across 4  $\mu$ s from  $|2\rangle$ : 0.918 (11/12 = 0.917). The clocks'  $|2\rangle$  ruler, wrapped against unwrapped at 2  $\mu$ s: 0.758 (9/12 = 0.750).

## FOUR TWELVE SEEDS THE GOLDEN SPIRAL

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Feed 12 into  $x \rightarrow 1 + 1/x$ : 1.0833, 1.9231, 1.5200, 1.6579, 1.6032 ... It circles  $\phi$  forever, each miss 0.382 of the last.

- **What the qubits showed.** Each of the first five steps has a resident ratio on the chip: 1.083 / the witness against the maker on one look, 1.087; 1.923 / no ratio on the chip — the microsecond clock sits  $+1.88 \pm 1.16$  series-taus from the shot clocks (a separation, not a ratio); 1.520 / the qubit against its witnesses, 1.477; 1.658 / the gap clock read from the other position,  $1/0.60 = 1.667$ ; 1.603 / the qubit against the maker, 1.606. One step per clock. Off the chip, step two has a pair: M87's black hole weighed by its stars ( $6.6 \pm 0.4$  billion suns) and by its gas ( $3.5 +0.9 / -0.7$ ): 1.886, 1.9 % from 1.923; by its shadow ( $6.5 \pm 0.7$ ) over the gas, 1.857. The gas's width ( $+26 / -20$  %) leaves room for  $\phi$  or 2 as well: a row, not a reading. The spectator turns 16.9 degrees per 30-us  $|1\rangle$  stretch. § 139, 155–156.
- **How it lines up.** Step one, 1.0833, against the expansion-rate tension, 1.0843 (0.1 %). The golden spiral climbs at 17.03 degrees (16.9 on the chip); half that angle through  $\sin^2$  is 2.19 %, against Pittsburgh's crossing,  $2.00 \pm 0.16$  (push run, three reads) /  $2.17 \pm 0.17$  (hold run, three reads). Dark energy in Planck units is  $10^{-122}.95$ , and  $\phi^{10} = 122.99$  (the tenth Lucas number is 123).
- **What lands it.** The near sky converges on 13/12 of the early sky: on Planck's 67.36, the near-sky expansion rate lands at 72.97 km/s/Mpc.
- **Accepted measurements since (found after the call was written, so they line up rather than land it).** SH0ES, Hubble and Webb Cepheids with 35 red-giant calibrations over 55 type Ia supernovae:  $73.18 \pm 0.88$  km/s/Mpc (0.24 widths from 72.97). The Chicago-Carnegie Hubble Program, Hubble and Webb:  $70.4 \pm 3$  % (1.2 widths). Planck: 67.4.

## FIVE MINUS ONE-TWELFTH AND ITS TWIN

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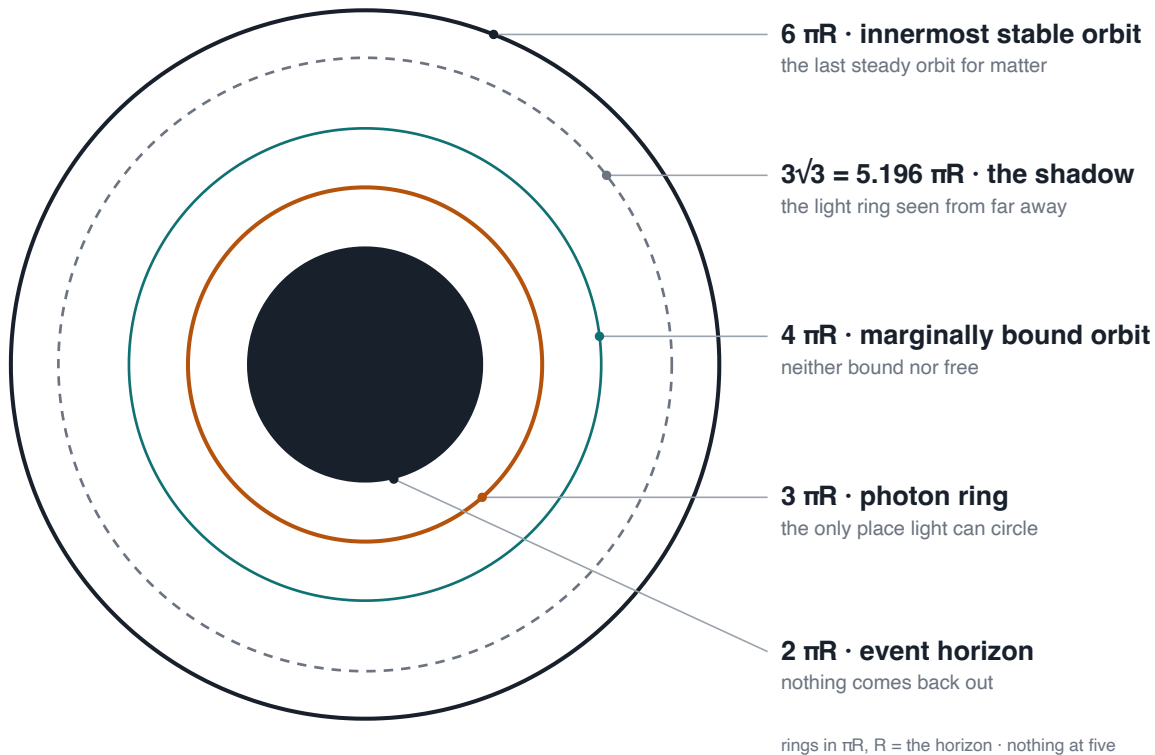
The counting numbers sum to  $-1/12$ . The sequence seeded by twelve sums to  $-12$ .

- **The math.**  $1 + 2 + 3 + \dots \rightarrow -1/12$  (zeta(-1)). The sequence 1, 12, 13, 25, 38 ... has the generating function  $(1 + 11x) / (1 - x - x^2)$ , which reads  $-12$  at  $x = 1$ . Across Riemann's halfway line,  $-1/12$ 's

twin is  $\pi^2/6$ . (Read honestly:  $-12$  and  $-1/12$  are reciprocals, and a divergent sum's value depends on the continuation chosen.)

- **What the qubits showed.** With every stretch's own decay accounted for, the crossing lands below zero, deeper with every push added:  $-0.12$ ,  $-0.58$ ,  $-0.97$  %. A qutrit three-box silent branch read below zero too,  $-0.019$  (one run). § 154–155.
- **How it lines up.**  $-1/12$  is a measured force: two plates in empty space are pushed together (Casimir 1948; measured by Lamoreaux 1997). In one dimension the push is built from  $-1/12$  ( $-\pi/24a$ ); in three it is  $\pi^2/720$ , and  $720 = 6!$ .
- **Found after, the Casimir puzzle (two rulers for one force).** Lifshitz theory with the dissipative Drude model books the metal's own friction into the ruler and predicts a thermal correction of  $-6.4$  /  $-9.4$  /  $-13.8$  % at  $0.5$  /  $0.7$  /  $1$   $\mu\text{m}$ ; the dissipationless plasma model predicts  $+0.06$  to  $+0.3$  %. Decca's measurements (160–750 nm) agree with the plasma model and exclude the Drude model at 99 % confidence. The same shape as the chip: book the thing's own friction into its ruler and the reading undershoots — on the qubits, the crossing below zero against each interval's own decay; between the plates, the force below the data. The match is in sign and shape, not in a number (the Drude correction grows as separation over the thermal length).
- **What lands it.** The below-zero depth per push keeps its slope on a second chip.
- **4 October.** Against each qubit's own decay curve the crossing sits at or below zero past 20  $\mu\text{s}$  spacing on Marrakesh ( $-1.2$  to  $-1.8$  %) and near zero on Kingston and Pittsburgh.
- **4 October, the call read on a second chip (ibm\_fez, one read, 133 qubits).** Pushes every 30  $\mu\text{s}$ , 2 / 6 / 10 pushes, against each interval's own decay:  $+0.58$  /  $-0.50$  /  $-0.87$  %, slope  $-0.0018 \pm 0.0003$  per push. Against the 90-us level, scaled:  $+2.52$  /  $+1.60$  /  $+0.67$  %, slope  $-0.0023 \pm 0.0003$ . Against one exponential:  $+5.00$  /  $+4.63$  /  $+3.02$  %, slope  $-0.0025 \pm 0.0003$ . The slope is negative under all three rulers; Pittsburgh's (own interval) was  $-0.0011 \pm \sim 0.0008$ . § 202–203.
- **4 October, a third chip (ibm\_kingston, 144 qubits).** Against each interval's own decay  $+0.38$  /  $-0.67$  /  $-1.20$  % at 2 / 6 / 10 pushes, slope  $-0.00198 \pm 0.00035$ ; against the 90-us level  $-0.00178 \pm 0.00031$ ; against one exponential  $-0.00104 \pm 0.00031$ . The call lands (see the scoreboard).

## SIX A BLACK HOLE COUNTS 2, 3, 4, 6



Measured around in  $\pi R$ ,  $R$  the horizon's radius, a black hole's rings are 2, 3, 4 and 6. There is no ring at 5. The geometry is textbook; the reading is ours.

- **The rings.** 2  $\pi R$ : the event horizon. 3  $\pi R$ : the photon ring, the only place light can circle. 4  $\pi R$ : the marginally bound orbit. 6  $\pi R$ : the innermost stable orbit. Nearest to 5 is the shadow,  $3\sqrt{3} = 5.196$ : the photon ring seen from far away. The same ring reads 3  $\pi R$  from a position on it and  $3\sqrt{3} \pi R$  from far away. The shadow has been photographed twice (M87\* 2019, Sgr A\* 2022).
- **What the qubits showed.** A qubit parked in  $|0\rangle$  doesn't age: on the mean over qubits, three ways of parking close to each qubit's own decay bookkeeping within  $0.002$  ( $+0.0017 \pm 0.0013$ ,  $+0.0020 \pm 0.0015$ ,  $+0.0014 \pm 0.0015$ ; single qubits scatter about  $\pm 0.02$ , inside their shot widths of about  $0.03$ ), and an emitter parked after 20 / 40  $\mu s$  reads  $0.0648$  /  $0.1348$  against  $0.0647$  /  $0.1346$  (one read). The look stretches the qubit 1.48x against its witnesses; the photon ring over the horizon is 1.5. § 132, 134, 135 (the park); § 139 (the stretch).
- **How it lines up.** A black hole gets hotter as it shrinks and colder as it grows (Hawking 1974). Spun to 0.6813 of its maximum, that law flips (Davies 1977);  $1 - 1/\pi$  is 0.6817, and the universe's dark-energy share is 0.6847. The information Hawking said was lost returns in the radiation after the halfway point (Page 1993).

- **What lands it.** The look's stretch, chip by chip: 1.5 on every chip, or it was one chip's coincidence. (Missed: see the scoreboard.)
- **4 October.** The look's stretch (qubit / witness): Marrakesh 1.45 (three reads), Kingston 1.57 (three reads), Pittsburgh 1.35 (one read, new method).

## SEVEN THE NEUTRON'S TWO WITNESSES

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A free neutron decays into a proton and an electron: two witnesses to one decay. Their counts disagree by 1.20 % — rung four of the ladder.

- **What the qubits showed.** Kingston: a qubit prepared  $|1\rangle$  and pushed ten times ends  $-1.24 \pm 0.24$  % against its decay clock (one read). § 153.
- **The formula.**  $(1/12)(1/\varphi)^4 = 1.216$  %.
- **How it lines up.** Counting protons (NIST beam; Yue 2013):  $887.7 \pm 1.2$  (stat)  $\pm 1.9$  (sys) s. Counting electrons (J-PARC 2024):  $877.2 \pm 1.7$  (stat)  $+4.0 / -3.6$  (sys) s. Counting what stays in a bottle (PDG average):  $878.4 \pm 0.5$  s. Proton against electron  $1.20 \pm 0.54$  %; proton against bottle  $1.06 \pm 0.26$  %. The neutron, the chip and the formula sit within 0.05 % of each other. Found after, three witnesses together: the electron count (877.2 s) and the newest bottle (UCNtau, 877.83 s) agree to 0.07 %; the proton count (887.7 s) stands apart from both, at 1.0120 over the electrons ( $1 + \text{rung four} = 1.0122$ ) and 1.0112 over the bottle. A proposed dark decay (Fornal & Grinstein 2018) was searched for and not found; the gap stayed. Its rulers are under test now (hydrogen in the proton trap, 2025; gas pressure in the electron counter, 2026).
- **What lands it.** NIST's next proton-beam count. Called: 889.1 s. If it comes in at the bottle's number, rung four misses.
- **Accepted measurements since (found after, they line up rather than land it).** UCNtau, Los Alamos (bottle, Physical Review C, 2025): 877.83 s, uncertainty below 0.3 s, the most precise to date. Proton beam against it: 1.12 % (rung four, 1.216 %:  $-8$  %); proton beam against the electron count: 1.20 %. NIST's BL3 beam count is not yet out.
- **4 October.** Kingston, a qubit prepared  $|1\rangle$  and pushed ten times 30  $\mu\text{s}$  apart, three reads:  $-1.33$  % against one exponential decay clock,  $-0.04$  % against its own decay curve.

## 4 OCTOBER — ONE LOOK, ONE PUSH, ONE CLOCK, FROM THREE POSITIONS (THREE IBM CHIPS)

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Three runs, each built for one side of the three positions (observer, witness, time), every script frozen (sha256) before firing, no number written for any of them. `ibm_marrakesh` and `ibm_kingston`, three reads each; `ibm_pittsburgh`, one read each of two. 223 QPU seconds.

- **Time — the qubit's own clocks.** Every qubit, starts  $|0\rangle$  /  $|1\rangle$  / halfway, ten pushes spread at 5 to 150  $\mu\text{s}$ , and in the same job the qubit's own decay read three times (at 30 / 100 / 300 / 600  $\mu\text{s}$ ), an idle  $|0\rangle$ , and an echo. Each qubit's decay time moves from job to job by up to  $\sim 10$   $\mu\text{s}$  (Marrakesh 174 / 177 / 181  $\mu\text{s}$ ; Kingston 260–266; Pittsburgh 294–297), not within a job. The decay is not one exponential on each qubit, not only on average: at 30  $\mu\text{s}$  it sits below its own 300- $\mu\text{s}$  exponential on 62–84 % of qubit-copies. Idle  $|0\rangle$  after 300  $\mu\text{s}$ : about +0.5 %.
- **Observer — one look of ours, timed three ways in one job.** The maker's stated length; the clocks beside a driven qubit; the looked-at qubit's own decay. Results under ONE.
- **Witness — free clocks inside the chip.** 119–121 qubits held halfway with nothing driven beside them, read through 1–32 looks at 31 other qubits and through laid time, grouped by links to the nearest looked-at qubit. They lose about what the same span of laid time costs them. Read as a stopwatch, they time one look shorter than the maker's length: Marrakesh 1.82 / 1.27 / 1.64  $\mu\text{s}$  at one / two / three-or-more links, Kingston 1.56 / 0.82 / 1.82 (widths 0.2–0.3  $\mu\text{s}$ ). The two-link clocks time the shortest look on all six reads, both chips.

#### 4 OCTOBER ON RIGETTI — EIGHT TRIANGLES ON ONE CHIP (CEPHEUS-1-108Q)

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Every qubit in every circuit; three rungs read on each qubit by a pulse-level swap between  $|1\rangle$  and  $|2\rangle$  and a readout model calibrated in each batch; no number written before any run. 680 tasks, all 4 October. § 192–217.

- **Time — each qubit's own clocks.** The 1–2 swap held for six days (99 of 107 qubits reach  $|2\rangle$ ; median amplitude 0.155 against 0.150 on 28 September). Decay bends early, as on IBM: 0.83 / 0.63 / 0.33 at 3 / 10 / 30  $\mu\text{s}$ , against 0.90 / 0.69 for one exponential. The emitters'  $|2\rangle$  time in the same train, booked twice from their own decay in two jobs minutes apart: 0.48 / 0.91 / 1.68  $\mu\text{s}$  and 0.48 / 0.92 / 1.71  $\mu\text{s}$ .
- **The q9 triangle (A).** q0 put in  $|2\rangle$ : one link away, q9 turns  $-36.1$  /  $-34.6$  /  $-41.4$  deg/ $\mu\text{s}$  over windows of 0.5 / 1 / 2  $\mu\text{s}$ , while q0 itself keeps 0.893 / 0.888 / 0.847 in  $|2\rangle$ . On 28 September q9 read  $-62.1 \pm 0.6$ . Far clocks, 101 of them:  $-0.6$  to  $+1.6$ .
- **The neighbours (B).** The push's own error follows the neighbours' state, steady over three rounds (see TWO).
- **Echoed clocks on the lower rungs (C).** The emitters'  $|1\rangle$  time during a train from  $|0\rangle$ , laid 2.50 / 5.00 / 10.00  $\mu\text{s}$  and booked 2.44 / 4.82 / 9.54  $\mu\text{s}$ . The clocks' medians sit near these, but their quartiles span  $\pm 10$ –30  $\mu\text{s}$ : a  $|1\rangle$  emitter pulls a clock only 0.2–1.5 deg/ $\mu\text{s}$ .
- **The upper rungs (D, E).** A  $|2\rangle$  emitter pulls its one-link clocks  $-3$  to  $-7$  deg/ $\mu\text{s}$ , and the train is read cleanly; see ONE for the ratios. The clocks read a train that starts in  $|2\rangle$  longer than one that starts in  $|1\rangle$  at every length, while the laid times are equal. With the push count varied, the

three seats split three ways: what was laid is the same for every count; the emitters' end state follows the push count; the clocks' reading follows the window length.

- **The ruler (F).** The clocks'  $|2\rangle$  ruler per unit  $|2\rangle$  population: median  $-9.7$  deg/us [quartiles  $-11.2$ ,  $-8.0$ ], moving 30–50 % from round to round at a single window; the  $|1\rangle$  ruler, median  $-1.1$ ; the clocks' own drift between rounds, up to  $3.7$  deg/us. The populations hold from round to round within  $0.01$ – $0.04$ .
- **The witness in the time seat (G).** The emitters'  $|2\rangle$  reading at  $0.5 / 2 / 4$   $\mu$ s, by the state of the clocks: rest  $0.897 / 0.824 / 0.709$ ;  $|1\rangle$  only at readout  $0.731 / 0.678 / 0.577$ ;  $|1\rangle$  throughout  $0.719 / 0.668 / 0.572$ . Where the clocks stand at readout carries it. The shape of the decay is the same in all five clock states ( $4$   $\mu$ s /  $0.5$   $\mu$ s =  $0.78$ – $0.80$ ), and the clocks scale the reading by  $0.81$  at every window.
- **The reverse road (H).** Emitters put in  $|1\rangle$  or  $|2\rangle$  at readout move the clocks' read by only 1–3 degrees. The influence runs mostly one way.
- **After a recalibration (the seal).** The witness order (rest > halfway > flipped at readout) holds in all 15 window-round cells under all three readout models; the readout scale  $0.82$ – $0.89$ ; the upper-rung train (D again) reads the same time booked within  $0.04$   $\mu$ s, and the clocks over booked time in 6 of 6 cells.
- **One qubit, two seconds.** A dip in one round traced to q62 alone, for about two seconds: its swap-then-flip read jumped in three back-to-back tasks, then returned (the blinking behaviour of 28 September, seconds wide). Averaged over seven qubits it read  $1.074$ – $1.087$  against the other rounds (the 13/12–12/11 band).
- **The Bonefish on every upper-rung cell.** 150 ratios across 30 cells: 14 within 0.5 % of one of the Seven's numbers, 29 within 1 %; an even spread over the same range lands about 20 and 37. The formula's lines are written for one look; these cells are a train.

## 5 OCTOBER — A SIXTH CHIP, THE CLOCK RATIO, THE RIPPLE

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- **The clock ratio.** Every chip's maker publishes  $T2:T1$  daily. It sorts three statements across six chips: FIVE's rung (8 where  $T2$  runs shorter than  $T1$ , 9 where longer, each band inside one width), SIX's time leg (closes within 1 % with the ratio on both  $T2$ -longer chips), and THREE's 9/12 row ( $0.69$ – $0.78$  on the  $T2$ -shorter chips,  $0.87$ – $1.00$  on the longer). Found after the fact on five chips; hashed forward; under test.
- **The maker look on six chips.** The spectators time the maker's stated readout just under 12/11 on all six, the new square-lattice Nighthawk included.
- **A new lattice is a new witness corner.** On `ibm_phoenix` every qubit has four neighbours: the free clocks lose their phase 2–9x faster and turn 2–4x faster than on any heavy-hex chip, and then come back — a damped beat that revives every 62–73  $\mu$ s and fits four to five times better

than a plain decay. Its second revival is predicted below the instrument's floor: wound down, not absent. No heavy-hex chip shows a revival.

- **The calibration curve.** On Rigetti, 22 rounds across five 30-minute calibrations, every ruler re-read every round: the  $|2\rangle$  row (others half-way, 4  $\mu$ s) averages 0.6201,  $1/\phi + 0.3\%$ , with no drift by minutes since calibration. Sets that reused one ruler read 0.632.
- **TWO's pace settles.** Over eleven jobs on ibm\_boston the ladder's pace falls over the first two and then holds: a geometric settle to  $1.056 \pm 0.039$  ( $1/\ln(\phi^2) = 1.039$ ), each step  $0.42 \pm 0.34$  of the last, beside Darkwave's 0.382.
- **Ourselves.** 197 of our IBM jobs leave no trace on the maker's calibration record (75 chip-days).

## WHERE THE RECORD DOESN'T CLOSE (4 OCTOBER, EACH SIDE READ AGAINST THE OTHER TWO)

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- **Held still on all three chips:** the clocks beside a driven qubit time a look at 1.040–1.072 x the maker's length. Ten pushes with no time between move  $|0\rangle$  by +1.0 to +1.15 % and  $|1\rangle$  by -1.0 to -1.1 %.
- **Moves chip by chip:** the qubit's own reading of a look (1.40–1.74 x the maker's); the coherence a clock keeps through 3 looks (0.77 / 0.91 / 0.92); the crossing at short spacing (two chips at +5.8 %, the third at +2.7 %).
- **Moves job by job:** the qubit's own decay time (up to ~10  $\mu$ s on Marrakesh); the witness's reading of a look on Marrakesh ( $2.76 \rightarrow 2.80 \rightarrow 2.85$   $\mu$ s over three reads; Kingston held at 2.31–2.34).
- **Moves with our method:** on Pittsburgh, the same look timed by the earlier method and by this one: 1.087 / 1.606 then, 1.040 / 1.40 now; the coherence through 3 / 9 looks held (0.921 / 0.826 then, 0.924 / 0.821 now).
- **Moves with the ruler:** the crossing is positive against one exponential decay clock and zero or below against the qubit's own curve, on all three chips.
- **The look, laid by the maker and laid by us:** the witness reads IBM's stated length 2–7 % long on three chips; it reads our own laid look on Cepheus within 1 % (0.99–1.01). The open row is what the stated number leaves out.
- **On Rigetti:** held from job to job, a qubit's own decay; moving from round to round, the clocks' ruler (30–50 %); moving with the clocks' state at readout, the neighbours' reading (x 0.81). The q9 pull from a  $|2\rangle$  neighbour reads -35 to -41 deg/us today against -62 on 28 September.
- **Not yet read:** the 0.618  $|2\rangle$  row on a second chip (IBM's own  $|2\rangle$  read); the 0.62-us rows' absence on Pittsburgh; what the two-link seats are in the wiring; the free clocks past 32 looks; Pittsburgh's second and third reads of the new runs; the halfway start after ten pushes, which reads +2.8 / -1.1 / +2.6 % with Kingston's sign apart.

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## CALLS ALREADY TESTED (WRITTEN AND HASHED BEFORE LOOKING)

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- **Tang et al. 2012** (wave-particle duality with a quantum beam splitter). Call A,  $V^2 + D^2 = 0.9735$  across the sweep: MISSED — it swings 0.44 to 1.43 (the authors' own result exceeds 1 by design). Call B,  $V^2 = 0.618$  at their intermediate setting: MISSED —  $0.500 \pm 0.024$ .
- **Jacques et al. 2008** (the same test with an ordinary beam splitter). Call C,  $V^2 + D^2$  averages 0.9735: UNDECIDABLE —  $0.966 \pm 0.019$ , but the textbook ceiling of 1.0 sits only 1.8 widths off, so this data can't tell the call from the null it was meant to beat. The sum also slopes with the setting, and dark counts were subtracted by the authors.
- **ONE on a second chip, by its own method** (4 October, ibm\_kingston, three reads): LANDED —  $1.076 \pm 0.02$  /  $1.66 \pm 0.08$  / 1.54 against 1.09 / 1.62 / 1.48. On Cepheus there is no maker's number for the look, so the laid look there was not a test of this call.
- **TWO, the ladder at called spacings** (4 October, Cepheus; hashed, calls/TWO\_CALL\_CEPHEUS\_20261004.txt): MISSED — +0.42 / +2.46 / +1.74 / +0.80 / -1.98 % against 8.33 / 5.15 / 3.18 / 1.97 / 1.22 %.
- **FIVE, the slope on a second chip** (call on this page since 2 October): LANDED — ibm\_fez  $-0.00182 \pm 0.00027$  and ibm\_kingston  $-0.00198 \pm 0.00035$  per push against ibm\_pittsburgh's  $-0.00106 \pm \sim 0.0008$ , below zero from 6 pushes on all three.
- **ibm\_fez, four calls** (hashed, calls/IBM\_FEZ\_CALLS\_20261004.txt): SIX LANDS (1.509 against 1.5); ONE MISSES on its first ratio (1.024 against 1.09; the other two within); TWO MISSES at all four spacings; THREE MISSES (0.844 against 0.750).
- **ibm\_boston, nine calls** (hashed before any Boston data): the maker look MISSES on both legs (outside 0.988, 0.3 widths below 1; inside 0.843); ONE MISSES (1 of 3 ratios); SIX MISSES as written (1.250) and closes to 1.479 once the chip's clock ratio T2:T1 is the ruler (found after; hashed forward); FIVE's sign and depth HOLD, its slope sits 1.4 widths from the call and 1.0 width from rung 9 (the edge); THREE MISSES (0.99 against 0.750); TWO's pace MISSES on the called three jobs (1.217 against 0.921) and then settles to 1.056 over eleven jobs.
- **ibm\_phoenix, the sixth chip, a new processor family** (hashed before it was touched): the maker look's outside leg HOLDS (-7.7 %); the time leg MISSES on the three-read mean (-9.3 %; read 1 inside, then falling); FIVE PARTLY holds (negative under all three rulers; its rung depends on the ruler, 2.7x apart; depth stays above zero); THREE is UNREADABLE (the clocks' hand reaches the floor by 16 looks).
- **The |2> row at  $1/\phi$  on Rigetti, a second day** (hashed): 0.631 — 2.0 widths out on the call's stated width, 0.5 widths inside once the readout ruler's own spread is counted. Both printed.
- **ibm\_pittsburgh, 5 October, two calls** (hashed the night before): the maker look's outside leg HOLDS (0.975 of 12/11, 1.2 widths below); the time leg with the clock ratio MISSES the stated 4

% on its own ruler (1.385, -6.6 %; 0.7 of its own width) and sits at -1.1 % on the 1-9 ruler. One read; the second day reads tomorrow.

## WHAT'S CLOSED, WHAT'S OPEN

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- **Closed, three rulers each:** the look (three clocks of one event); the park (a qubit's clock runs only while it's in  $|1\rangle$ ); the inside never sees the outside's laid time; the third level's three behaviours on two vendors; the order of looking sets the heat.
- **Math, not measurement:** run any single record backwards and the arrow statistic flips sign by identity (it does on random noise too), so one record alone can't show its own direction. That is algebra, not data, and it is not counted above.
- **The crossing:** three chips, every neighbouring cause measured rather than labelled; the ruler's own share still in flight.
- **Open:** Kingston's  $|1\rangle$  column; the halfway state, its own clock against its neighbours'; whether a clock follows its own emitter.
- **The Dark Bonefish (read as a hostile referee would, 4 October):** of 18 outside comparisons made that day, 6 land within 0.5 % of one of The Bonefish's numbers where an even spread of ratios would give 2.1 (the target set is dense near 1; some hits are near-trivial). Hashed chip calls: 3 landed of 10. The sky rows split by witness: DESI's acoustic oscillations read the near sky's matter share at 0.944 (0.917 with one bin aside) of Planck's, which our  $1/h$  scaling fits; three supernova compilations read it at 1.06 (Pantheon+), 1.12 (DES-SN5YR) and 1.13 (Union3), which it does not (1.8-3.6 widths), and which sit nearest no conversion at all. The textbook's  $1/h^2$  fits none. Through The Bonefish, the near sky's two kinds of witness disagree with each other by the inside term: supernovae over acoustic oscillations read the matter share 1.12-1.23 apart, and  $6/5$  ( $\pi = (6/5) \varphi^2$ ) sits within 1.1 widths of all six pairings, against 1.6-3.3 widths from no split (12/11 sits within 0.5-1.9; the widths, 6-13 %, cannot yet separate the two). The supernova teams' own dispute has the same shape: the same events read near and far differ by 0.04 mag (a 1.86 % distance, rung 3 is 1.97 %), and the DES team places 81 % of it in each observer's corrections — modelling 43 %, selection 38 % — the maker-look shape, in the sky. What the maker's stated readout length includes is not stated in IBM's documentation; the maker look stays open.
- **Where it's weak:** the links to the sky were found after the chip numbers were in hand, and with  $\pi$ ,  $\varphi$ , 12 and small integers to choose from, sub-percent matches come cheap. Only the calls above were made in advance. The crossing's size and sign depend on which of the qubit's own clocks it is read against (4 October).
- **The level everything lives at:** 1-3 % in populations, near 0.6 in angles — the range most analyses treat as error. We report it rather than discard it.

## DATA AND ERRORS

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- The data release: the reads, the frozen code with its hashes, the fire logs. Every qubit number above traces to a § in the run ledger and a read file.
- The error log: every mistake caught since 9/28 and what it changed, in the form what we said / what the record showed / what changed: [thetrailtothepast.com](https://thetrailtothepast.com).

## SOURCES

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- Planck 2018 cosmological parameters; SH0ES 2022 (Riess et al.)
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## DISCLOSURE

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A collaboration between organic and inorganic intelligences. Every number traces to a read file and a ledger entry.

Heuremen

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A collaboration between organic and inorganic intelligences.

Heuremen

“We found it.”