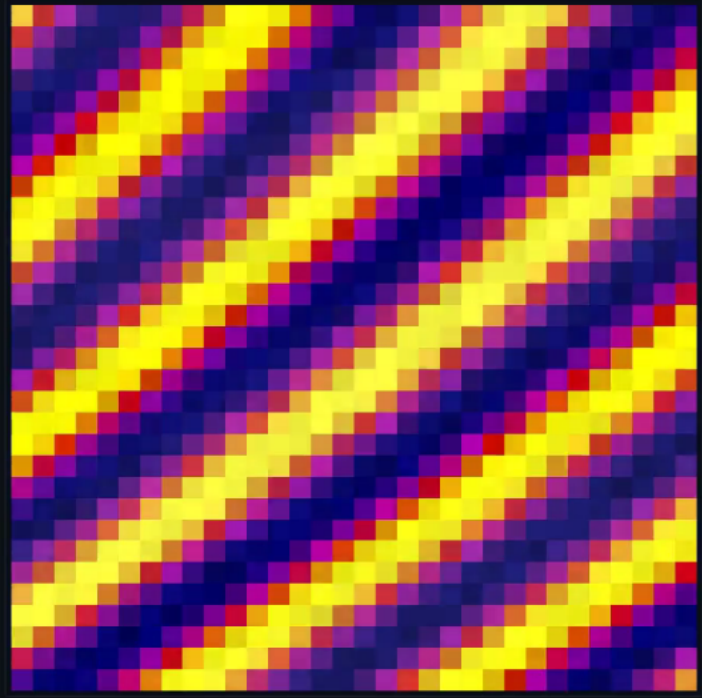
Bursts, not mean shifts

Testing temporal bursts on an immersive hardware-RNG platform.

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Danielle Caputi, Ph.D. · **Timothy Beach**

Recorded edition of the talk given at The Science of Consciousness 2026 (15 October). Numbers updated to 29 October 2026.



Generative wave pattern · live entropy glitch dynamic

← → move · T theme [Switch to 32-Slide Master Deck]

THE HYPOTHESIS: BURSTS, NOT MEAN SHIFTS

Cumulative means cancel episodic deviations; burst detection isolates them



THE EFFECT SIZE PROBLEM

Canceling signed means

Decades of micro-PK averaged signed bits. Effect sizes came out microscopic (**h = 0.0006**) because alternating excursions cancel to zero.

UNSIGNED MEAN |Z|

Preserving volatility

Primary endpoint. Amplitude away from chance, **regardless of sign**. Effect size becomes volatility, not drift.

THRESHOLDED BURSTS

Tail clustering in time

Secondary endpoint. Counts 60-second periods with **|z| ≥ 1.96**. Powered for concentrated bursts, not smeared drift.

Signed means cancel. Unsigned |z| keeps the excursions. The question becomes: do bursts cluster in time during absorption?

Jahn et al. (1997). *JSE, 11*, 345. · Radin & Nelson (1989). *Found. Phys., 19*, 1499. · Bösch et al. (2006). *Psychol. Bull., 132*, 497.

LINEAGE · FROM FIELDREG TO IMMERSION

Three results this design starts from

1. FIELDREG (1996–1998)

Academic venues null

Passive ambient fields. **Tucson II (1996) p = 0.387**; all academic venues pooled **p = 0.96** (FieldREG II, Tables 1b and 2b).

2. PORTREG (2000)

Fixed N, no confirmation

3 labs, 227 operators, 250 series per lab fixed in advance. HI–LO **z = 0.60** vs prior **3.81**. Operator-started vs timer-started trials: **no difference**.

3. PHOTONIC QRNG (2018–2021)

Null on the pre-specified mean

Maier et al. 2018 (**12,571**); Dechamps et al. 2021 (**>12,000**). The post hoc oscillation was matched by chance on reanalysis (Grote 2018).

4. IONOSPHERE (2026)

Immersion as the variable

The stream is the room. **Unsigned |z|** and bursts replace canceling means. **Circular shifts** keep serial dependence.

The passive gray box is the starting point. Whether an operator inside a feedback loop behaves differently is the question, not the premise.

Nelson et al. (1998). *JSE, 12*, 425. · Jahn et al. (2000). *JSE, 14*, 499. · Maier et al. (2018). *Front. Psychol., 9*, 379. · Dechamps et al. (2021). *JAEX, 1*, 114.

THE APPARATUS: PHYSICAL RIG & SOLO SETUP



192-rod chime chandelier & ambient array test

ROOM-SCALE CAPABILITY

192-rod chandelier & 1,000+ LED array

Solenoid chimes and addressable LEDs driven live by avalanche-diode entropy.

PRE-COMMITTED SOLO WORKSTATION

Extended display, darkened room

Visual feedback only; no audio in these runs. Heat and proximity to the device remain (slide 13).

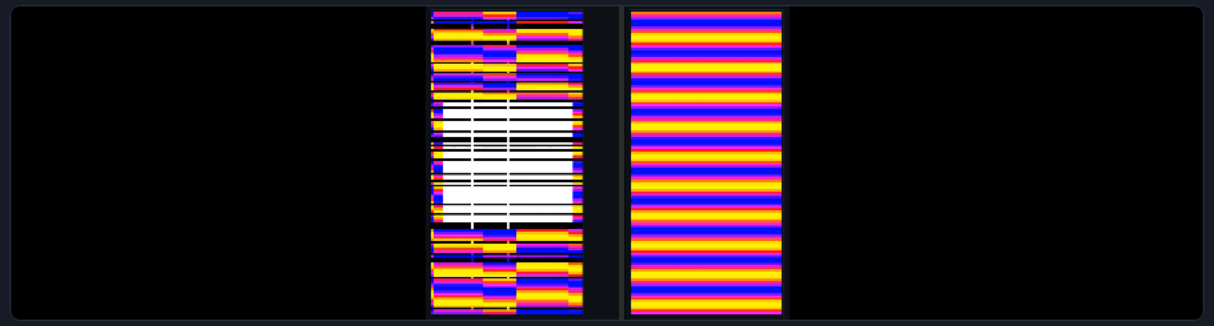
THE INSTRUMENT

Locked at 10,400 bytes per period

Avalanche-noise hardware RNG (TrueRNG v3); **10,400 bytes** every 60-second period; bit-count **z** per period. Post-processing: FILL.

No gauge to push. The display settles near chance and tears away from it; the settling is the only reward.

What the operator sees: departure from chance tears the pattern, coherence lets it settle



Vertical Stripes High vs. Low Glitch

High glitch introduces **jagged tearing and dislocation**. Low glitch resolves columns into **smooth, coherent ribbons**.

← → move · T theme [Switch to 32-Slide Master Deck]

EXPLORATORY CLUES · THE CONFIRMATORY TURN

Clues that motivated sealing the design



MEMORIAL BALLOON RELEASE

z = 4.04 · peak excursion

Dad's first birthday after his passing. Our highest reading, minutes after the balloon went up.



MUSICAL FLOW

Singing & piano

Across focus periods, z **tended to run high** while singing or playing piano. An impression, not a score; the state logger now stamps these.



AUTUMN LIGHTS FESTIVAL

z = 3.31 when meditators arrived

4 days, 3,222 periods, aggregate null. One transient spike, uncorrected p < 0.001.

JULY 4 PAIRED RUN

9 windows: **10.3%** bursts vs 3.9%, **p = 0.007**. Simultaneous PRNG control flat.

THE CONFIRMATORY TURN

Noticed after the fact: **clues that motivated the design, not evidence**. Every window, seed and analysis was then fixed before the next session.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology. *Psychol. Sci., 22*, 1359.

PRE-COMMITMENT: WHAT IS FIXED BEFORE A RUN, AND WHAT IS NOT

Hidden focus schedules, SHA-256 commitments, and the channels still open

SCHEDULE & WINDOWS

Hidden 15-min blocks + K=5 buffer

6 h (380 periods) or 3.3 h (200 periods) runs. Operator **told of a window only at its onset**. 5 periods after each window dropped from baseline.

PRE-COMMITMENT & LIMITS

SHA-256 committed in-repo

76 schedule hashes committed before collection; no seed reused. **No external registry entry. Number of runs never fixed**: the pool is interim.

CHANNEL (DECISION AUGMENTATION THEORY)	STATUS	HOW
Window placement inside a session	**Closed**	Generated from a seed, hashed before the run, hidden from the operator
Session start time	Open	Chosen by the operator; fixed starts are the sealed follow-up
Number of runs, stopping	Open	Never fixed; pooled figures reported at interim looks
Inclusion & analysis rules	**Fixed per run**	Endpoint, mask, buffer, burst threshold, test fixed before each run; gate diagnostic only, never excludes. **The run is the unit of analysis.**

May, E. C., et al. (1995). Decision augmentation theory. *J. Parapsychol., 59*, 195.

THE CONTROL LADDER & THE OPERATOR ARMS

Same rig, schedule shape and analysis. Only the operator changes

RUNG / ARM	QUESTION IT ANSWERS	STATUS (29 OCT 2026)
1. PRNG, no windows	Does the pipeline make structure from software noise?	Run; flat
2. PRNG + schedule + alerter	Do host events at window transitions manufacture anomalies?	**2 windowed runs** (6 in the stratum)
3. Unattended TrueRNG + schedule	Does the device show the excess with nobody in the room?	**4 runs** since the conference; target 15–20
4. Attended human solo	Primary arm: operator immersed in live visual feedback	**39 runs**
5a. Human + two language-model companions	Does a text exchange during windows change anything? Companions see live z, never the schedule	9 runs · Δ = +0.017, p = 0.25
5b. Language model as sole operator	Procedural null under its own geometry (4 × 5-min windows, 90 s gaps, stream off)	5 runs · Δ = −0.035, p = 0.80

> **Rungs 2 and 3 are the ones that decide whether the excess is the operator or the pipeline. Neither is big enough yet.**

STATISTICAL ANALYSIS PLAN: CIRCULAR SHIFTS

Dependence-preserving null, fixed before each run

PRIMARY ENDPOINT

Mean |z| in-window vs. baseline

The committed window mask is shifted around the run's own z series. **20,000 sampled shifts** in the pooled script; **exact enumeration** of every distinct placement in each run report. One-tailed for enrichment. Run-stratified, never concatenated.

SECONDARY ENDPOINT

Placement test on |z| ≥ 1.96

Burst-rate difference against the circular-shift null; Mantel-Haenszel odds ratios across runs.

BETWEEN ARMS

Run-level label permutation

Runs are independent units; within-run dependence stays inside each run's statistic. Reported with the contrast on slide 10.

Instrument check per run: variance, bit balance, byte distribution and duplicate reads against 300 simulated ideal sources, before analysis. Rows in each run report.

Yuan, A. E., & Shou, W. (2024). *PLOS Biology, 22*(8), e3002758. · Harris, K. D. (2020). *arXiv* 2012.06862.

THE POOLED RESULTS

Attended solo arm, then the two controls that would tell it from the pipeline

STRATUM	RUNS	IN-WIN	BASE	Δ	P
Human solo, conference (15 Oct)	36	4,923	5,911	+0.0314	p = 0.0062
Human solo, 29 Oct	39	5,148	6,214	**+0.0344**	**p = 0.0020**
with the 11 planted-data runs left in	45			+0.0575	p = 0.0002
gate-passing subset (sensitivity)	25	3,353	4,014	+0.0124	p = 0.2278
Unattended TrueRNG + schedule	4	299	404	+0.0030	p = 0.49
PRNG + schedule	2	300	408	**+0.1413**	**p = 0.0224**

Solo vs. unattended

Difference **+0.031**; run-label permutation **p = 0.49**. Four runs cannot bound it: per-run sd 0.087, so 15–20 are needed.

Solo, run-level bootstrap (after the fact)

95 % interval **[+0.008, +0.065]**, 20,000 resamples. Burst odds ratio **1.52**; placement p = 0.0002.

PRNG + schedule

Bytes verified independent. **What the shift test gives on a known null with two runs.** The pipeline's null at 2, 36 and 39 runs is not yet simulated.

A small in-window excess that appeared again in October. Not yet a pooled significance claim: the pipeline has not been shown clean at these sizes.

WINDOWED RUNS · A COUNT, NOT A TEST

8 of 69 clean windowed runs clear uncorrected p < 0.05 on the shift test (3.5 expected)

RUN	ARM	PERIODS (IN / BASE)	IN-WIN |Z|	BASE |Z|	ENRICHMENT	SHIFT P	BURST OR (FISHER TWO-SIDED P)
SOLO-25	solo (6.3 h)	150 / 179	0.9497	0.6801	+0.2696	**0 of 378 placements** (floor 1/379)	**11.31 ×** (p < 0.0001)
PRNG-SCHED-1	control (6.7 h)	150 / 202	0.9228	0.7266	+0.1962	**p = 0.0383**	1.93 × (p = 0.148)

The count includes a pseudorandom scheduled run. No single session is read on its own. The conference figure, 15 of 73, counted the planted-data runs.

FEEDBACK COUPLING: ON VS OFF

Does live coupling add anything on top of the immersion? So far, no

THE CONTRAST

Balanced within run

Half the windows couple the glitch to the live stream; half hold it constant at matched intensity. Condition **unannounced**; the live z was visible in both.

RESULT

No incremental effect

ON minus OFF **+0.018** across 39 runs. Per-run two-sided tests: **1 of 39** below 0.05.

WHAT IT TESTS

Contingency, with immersion held constant

OFF removes the live coupling, **not the room**. The contingency of the feedback did not show.

PEAR's own review found feedback mode mostly irrelevant to its effect. This contrast agrees. Engagement was sustained in both states; the contingency was not what mattered.

ATTRIBUTION & LIMITS

If the excess is real, the data cannot yet say where it comes from

ATTRIBUTION

Operator + display + instrument

Attention, luminance, body heat and EM near a USB device, or the device itself. **Not isolated**; and the pipeline is not yet cleared.

ONE PERSON, THREE ROLES

Operator, experimenter, analyst

A design the field's own methodologists say **cannot separate** participant, experimenter and analyst effects.

EXPERIMENTER EFFECT

Performance pressure

Wanting a high z brought **anxiety**, the opposite of absorption. Multi-TBI short-term memory: windows **forgotten mid-run**.

RIGOR VS READINESS

Fixed clocks

Fixed clocks handled timing and demanded focus on command. Next: **readiness measured before** the session.

Every causal sentence in this talk carries the sole-operator limit.

HOW THIS COMPARES ON METHOD

Three rows; the full table with page-cited cells is on the site

	PEAR REG (1997)	PORTREG (2000)	GCP (2008, 2017)	TRANSPARENT PSI (2023)	IONOSPHERE (2026)
Pre-commitment	Intention recorded before each run; no registry	Primary criterion and **250 series per lab** fixed by three labs	Events registered, sometimes after they occur	**Registered Report**, consensus protocol, OSF	**Schedule hash-committed before every run**; number of runs never fixed; no registry
Controls	Unattended calibration, 5.8 M trials; pseudorandom sources null	Concurrent unattended calibrations	XOR; resampling; clone database on request	Audit and tamper-evident software; no source arm	PRNG with and without schedule; **unattended runs, schedule armed**; per-run instrument check
Replication	Internal; the external test did not confirm	Is the replication; not confirmed	None independent; internal reanalysis favours an experimenter effect	**Ten laboratories**, nine countries	**None. One operator, one rig, no ethics board, raw runs not public**

Ahead on committing the schedule and on scheduled unattended controls. Behind on operators, replication, registration and open raw data.

Jahn et al. (1997). · Jahn et al. (2000). · Bancel & Nelson (2008, preprint); Bancel (2017). · Kekecs et al. (2023).

WHAT WOULD CHANGE OUR MINDS

Written before the data, so it cannot be renegotiated later

AGAINST THE HYPOTHESIS

Failure at a fixed N

Primary contrast failing at a fixed number of runs, then powered independent replications failing. **This corpus never fixed N**; the sealed follow-up does.

AGAINST THE APPARATUS

Unattended runs match

If **15–20 unattended** scheduled runs reproduce the excess at attended rates, it belongs to the rig or the room, not to attention.

AGAINST INTERIM FINDINGS

Pool regresses to null

If the attended pool regresses to baseline as it grows, the early signal was fluctuation. Equally publishable.

OWED FIRST

Null-ensemble calibration

The frozen pipeline on **thousands of simulated PRNG sessions** under the committed schedules: the shift test's null at 2, 36 and 39 runs.

A well-powered null is a successful outcome: it constrains effect sizes under immersive conditions and leaves an audited platform behind.

WHAT COMES NEXT

Only what is already written down

GRANT PROPOSAL, SUBMITTED AUGUST 2026

Hybrid EEG–RNG feedback for amplifying mind–matter interaction effects

Host ICRL; 36 months; EEG-only, RNG-only and hybrid sessions with meditators; OSF registration before data. **Decision pending.**

SEALED FOLLOW-UP (OUTLINE)

Fixed, pre-committed session starts

Start times hidden from the operator, three operators, sealed cards, a third-party analyst. **Fixes the two open channels** on slide 7.

LANGUAGE-MODEL OPERATOR (OUTLINES)

Specificity control

A non-human operator inside the sealed protocol, and a separate all-machine coupled / blind / sham design. Five exploratory runs pooled flat.

LIVESTREAM AUDIENCE ARM (BUILT)

Remote marks against the hidden schedule

Viewers mark felt window onsets and absorbed states in hash-chained logs. **No counted run yet.**

Before any of it: the unattended target, the null-ensemble calibration, and an external registration before further collection.

CORE TAKEAWAY & OPEN DATA

Projects, collaborations, and open resources

THE SYNAPSE

thesynapse.co

Mason: Tech lead, program planner
Dani: Part of Synapse

AEGIX LINUX

aegixlinux.org

Mason & Timothy: Co-founders
Open-source deterministic OS

IONOSPHERE PLATFORM

ionospherelabs.com

Commitment record • Live stream
76 schedule commitments

RESEARCH PORTAL

masonborchard.com

Conference papers • Slide decks
Statistical methods notebooks

Public today: the commitment record, the analysis report, the apparatus code. Run directories on request until published.

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