

ERRATUM

Taking a Loop Walk Through the Integer Forest — 10.5281/zenodo.21449569

Matthew “Bear” Schulz · ORCID 0009-0000-0956-5743

v2, issued 2026-08-22 (first v2 build 2026-08-17), amending the erratum of 2026-08-07 · CC BY 4.0 · Preprint erratum, not peer reviewed

WHAT CHANGED IN THIS VERSION

The erratum of 2026-08-07 corrected Section 2’s construction rule and left the worked example two lines below it uncorrected. That example still instructed the reader to “climb one rung,” which is the superseded rule’s language and produces a different number. Applied exactly as written, the first erratum therefore left the paper stating one rule and demonstrating another.

Erratum 3 below is new. Errata 1 and 2 are unchanged in substance and keep their numbering, so any citation to them still resolves. Four sentences of framing were adjusted to account for a third item, and they are listed here exhaustively so that a reader can diff the two versions and find no surprises: “Two corrections to the deposit” became “Three corrections to the deposit” and gained the clause “one worked example that followed from it”; “affected by either erratum” became “affected by any of these errata” in the *What does not change* preamble and again in the *Reproducibility* line; and “Both are recorded here rather than quietly patched” became “All three are recorded here.” The issue date and version line changed accordingly. In the build of 2026-08-22, two further housekeeping changes were made: record identifiers were moved to concept DOIs, which always resolve to the latest corrected version of each work, and the former related-deposits list was removed — this erratum now cites only the works it engages, the paper it corrects and the companion carrying the corrected figure. The loop-walk family is indexed by the Field Guide, not by each record’s margins. **Nothing else in this document differs from the 2026-08-07 text**, and the amended build is verified against the deposited one paragraph by paragraph.

Three corrections to the deposit of 2026-07-18. No measured value changes. Every number in the original paper was computed by the code and every number was right. What was wrong was one sentence of prose describing the code, one worked example that followed from it, and one figure’s label placement.

ERRATUM 1 — The construction text describes the wrong climb

Where. Section 2, The Construction, step 3.

What it says.

“...while climbing to vertical height equal to the running count of distinct primes used.”

What the code does. The climb is the rung of the largest prime factor — the index of the biggest prime in the factorization among all primes — not a tally of how many distinct primes appear.

Why it matters, and how it was caught. Only the largest-prime-factor reading reproduces the values the paper itself prints:

quantity	largest-prime-factor reading	running-count reading	printed in the paper
R(113)	30.00110	1.03	30.00110
R(100)	4.26423	3.63	4.26423

The published numbers are correct. The prose describing how they were produced is not. Anyone re-implementing from the text alone would have failed to reproduce the paper, which is precisely the failure a methods section exists to prevent.

Corrected text.

“...while climbing to vertical height equal to the rung of the largest prime factor encountered so far.”

Also affected. The same clause appears compressed in the Abstract (“climbing one vertical rung per distinct prime”). It should read “climbing to the rung of the largest prime factor.”

Related clarification. The companion paper *The Tower Is Coordinate-Free* (2026-08-01) identifies a second hygiene issue the original left implicit: two distinct quantities were both called “the hypotenuse.”

name	definition	what uses it
the flat chord C(n)	$\sqrt{x^2 + y^2}$ — distance home ignoring height	the closure deficit
the full reach R(n)	$\sqrt{x^2 + y^2 + \text{rung}^2}$ — distance home in 3D	the octave law

Measured: C(127) = 1.75547, R(113) = 30.00110. Readers of the original should take “hypotenuse” to mean the full reach R(n) wherever the octave law is under discussion, and the flat chord C(n) wherever the closure deficit is.

ERRATUM 2 — Figure 4’s labels collide

Where. Figure 4, the cylinder-forest schematic (fig_cylinder_schematic.svg).

What is wrong. Three text labels in the lower-left of the figure overlap in the rendered PDF. “C₁ (primes)” and “stem” overprint one another, producing an unreadable composite, and the stem line passes through the word “observer.”

Corrected figure. A corrected version of the same schematic — same content, same colours, labels repositioned and legible — appears as Figure 3 of the companion paper *The Tower Is Coordinate-Free* (2026-08-01). Readers should refer to that rendering.

Nothing in the figure’s content changes. The cylinders, the nesting relation, the radius-equals-top-exponent statement and the grazing caption are all as originally intended. Only the label layer was mispositioned.

ERRATUM 3 — The worked example still follows the superseded rule

New in v2. This correction was not in the erratum of 2026-08-07.

Where. Section 2, the worked example for $n = 100 = 2^2 \cdot 5^2$, two lines below the step-3 text that Erratum 1 corrects.

What it says.

“stem north one unit; two units at heading $\text{rung}(2) \cdot \alpha = 137.5^\circ$; climb one rung; two units at heading $\text{rung}(5) \cdot \alpha = 3 \cdot 137.5^\circ = 52.5^\circ \pmod{360^\circ}$.”

Why this is not merely stale wording. “Climb one rung” is the superseded rule carried into an example. Under the corrected rule the walk climbs twice, to a different height each time: to $\text{rung}(2) = 1$ after the two-unit leg on 2, and to $\text{rung}(5) = 3$ after the two-unit leg on 5. The final height is 3, not 2 and not 1.

And the paper’s own printed value depends on which one you take. The construction of record, tower_of_primes.py v1.0, emits six points for $n = 100$ with heights 0, 0, 1, 1, 3, 3, and returns 4.26423 — the value Section 2 prints. Substituting a final height of 2, which is what “climb one rung” yields, gives 3.63093 from the same endpoint. A reader who applied Erratum 1 to the rule and then followed this example unchanged would land on 3.63093 and conclude the paper’s printed 4.26423 was wrong.

Corrected text.

“stem north one unit; two units at heading $\text{rung}(2) \cdot \alpha = 137.5^\circ$, with the height climbing to $\text{rung}(2) = 1$; then two units at heading $\text{rung}(5) \cdot \alpha = 3 \cdot 137.5^\circ = 52.5^\circ \pmod{360^\circ}$, with the height climbing to $\text{rung}(5) = 3$. The climb is to the rung of the largest prime seen so far, not one step per prime: the final height is 3, and it is that 3 which produces the printed reach.”

Also affected in the same sentence. The example ends “The endpoint and hypotenuse are exact.” Per the clarification in Erratum 1, name which one: the flat chord is C(100) = 3.03046 and the full reach is R(100) = 4.26423.

WHAT DOES NOT CHANGE

For the avoidance of doubt, none of the following are affected by any of these errata:

- injectivity on $[1, 10^6]$ with zero collisions
- the octave law $k = \text{rung} + 1$ and the $p = 5$ anomaly
- walk length $= 1 + \Omega(n)$
- the ancestry theorem: 13,197 grazing events, zero unexplained
- the cylinder census and the 1.78×10^{-15} radius deviation
- stiff spreading at exponent 0.977
- frame-lock ceiling 1.072924 and the Fibonacci tune points
- the Liouville parity excess of 531
- the torus-knot anchors and $\det T(2,q) = q$

- the registered blind prediction
- every novelty statement and every prior-art attribution

All receipts in `crate_2026-07-17_VERIFIED.zip` regenerate unchanged.

HOW THIS WAS FOUND

Erratum 1 surfaced during the writing of the companion paper, when the two “hypotenuse” quantities were separated and the construction text was checked against the code rather than against memory.

Erratum 2 surfaced during a pre-deposit visual check of the companion, when the same schematic was rasterised from both papers and compared side by side. The collision is invisible in the PDF text layer — the labels sit on separate lines there — and appears only in the rendered image. Prose review cannot catch a label collision; only looking at the picture can.

Erratum 3 surfaced while applying Erratum 1 to the paper itself, ten days later. Fixing the rule put the corrected sentence directly above an example that contradicted it, and the contradiction was only visible once both were read together. The lesson is narrower than the first two and worth stating: **a correction to a rule is not complete until every worked example downstream of that rule has been re-derived under it.** An erratum that repairs a statement and leaves its demonstration standing has moved the defect rather than removed it.

Both the finding and its arithmetic were checked against `tower_of_primes.py v1.0` (sha256 24ce2e55fca1...), the construction of record shipped in the original deposit, rather than against a reimplementatation.

All three are recorded here rather than quietly patched, because a corrected record that shows its corrections is worth more than a clean one that hides them.

DEPOSIT METADATA

Author Schulz, Matthew · Independent Researcher · Belmont, CA ORCID 0009-0000-0956-5743 · mattschulz97@protonmail.com **Type** Preprint (erratum) · **License** CC BY 4.0 · **Issued** 2026-08-17 (v2; v1 issued 2026-08-07)

Corrects. Taking a Loop Walk Through the Integer Forest — 10.5281/zenodo.21449569 (concept DOI; always resolves to the latest, corrected version)

Corrected figure appears in. The Tower Is Coordinate-Free — 10.5281/zenodo.21798310, Figure 3

Reproducibility. All receipts in `crate_2026-07-17_VERIFIED.zip` regenerate unchanged. No measured value in the original paper is affected by any of these errata.