

# Interesting Unsolved Integer Sequences

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**REU Seminar  
DIMACS, Rutgers University, June 11 2026**

# Outline

- **1. The OEIS (The On-Line Encyclopdia of Integer Sequences)**
- **2. The Curling Number Conjecture and Gijawijt's Sequence**
- **3. RUNS, RUNS, RUNS**
- **4. LES: Lexicographically Earliest Sequences**
- **5. Extras (if time permits)**

**1.**

**OEIS**

**The On-Line Encyclopedia of Integer Sequences**

**<https://oeis.org>**



0 1 3 6 2 7  
: OE 13  
: IS 20  
23 12  
10 22 11 21

# THE ON-LINE ENCYCLOPEDIA OF INTEGER SEQUENCES<sup>®</sup>

founded in 1964 by N. J. A. Sloane

## The On-Line Encyclopedia of Integer Sequences (OEIS)

Enter a sequence, word, or sequence number:

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# The OEIS: <https://oeis.org> (cont.)

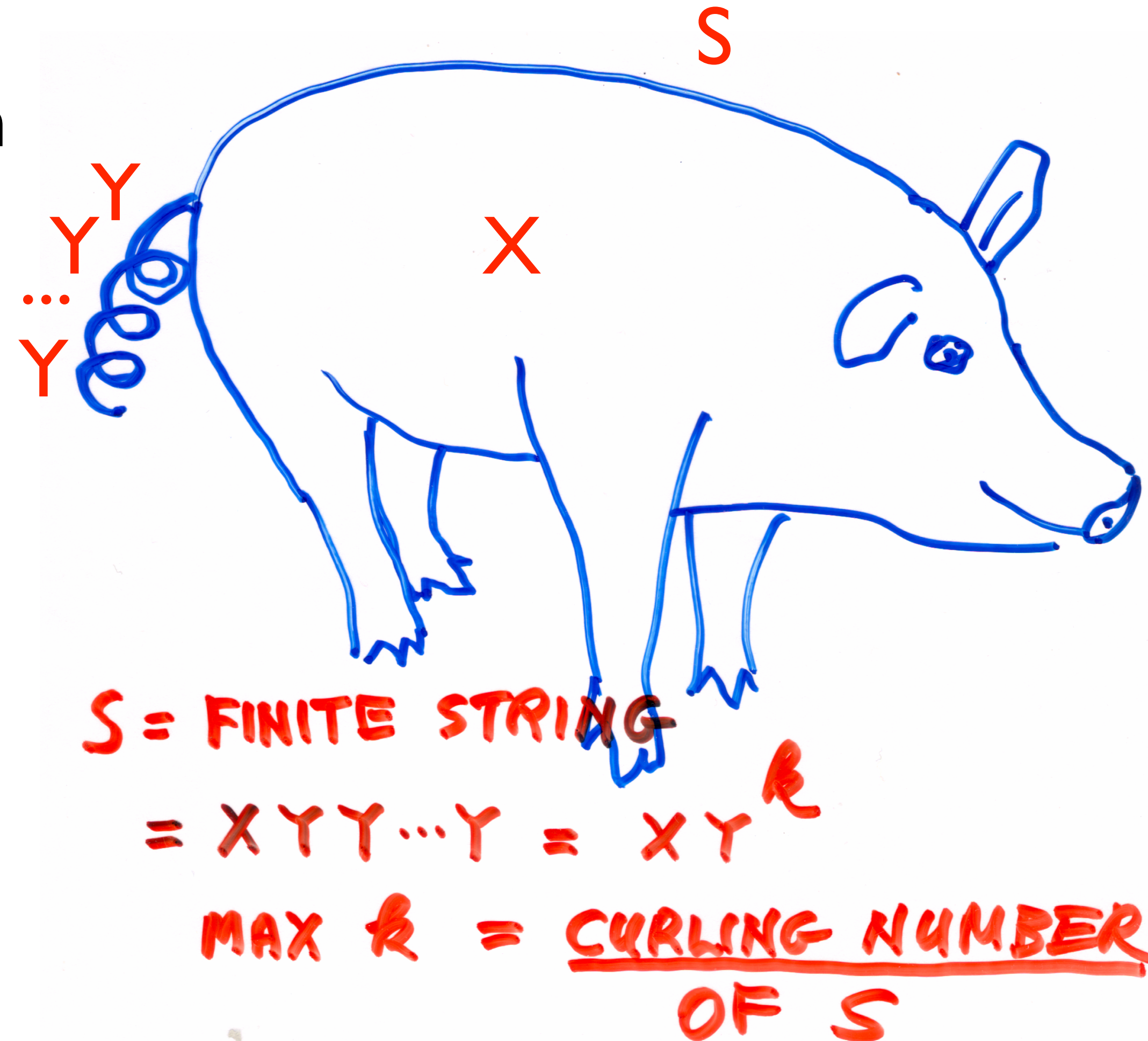
- Fun: 2, 4, 6, 3, 9, 12, 8, 10, 5, 15, ...? (See [A064413](#))
- Addictive (better than video games)
- Accessible (free, friendly, 15000 registered users)
- Street creds (13000 citations in the literature)
- New: Sean Irvine is Managing Editor
- Best math site on the web
- Essential reference (396000 entries,  $10^6$  hits a day)
- Low-hanging fruit - lovely problems (see <https://oeis.org/draft>)
- Join the SeqFan Mailing List: ([oeis.org/wiki/Main\\_Page](https://oeis.org/wiki/Main_Page), scroll down)

# **2. The Curling Number Conjecture**

B. Chaffin et al., On the curling number of integer sequences, J. Integer Sequences, 16 (2013), #13.4.3; arXiv:1212.6102.

# The Curling Number Conjecture (cont.)

## Definition of Curling Number



$$S = 7522522522, k = 3$$



# CURLING NUMBER CONJECTURE

- START WITH ANY FINITE STRING
- APPENDS CURLING NUMBER
- REPEAT
- THEN MUST REACH A 1 !?

E.G.

START : 2 2 2 3 2 2

THEN

2 3 2 2 2 3 3 2 1 ...

↑  
BOO!

Problem 2026.1: Prove or disprove  
the Curling Number Conjecture

# Gijswijt's Sequence

Dion Gijswijt, 2004

A90822

**Fokko v. d. Bult, Dion Gijswijt, John Linderman,  
N. J. A. Sloane, Allan Wilks ([J. Integer Seqs.](#), 2007)**



# Gijswijt's Sequence G (cont.)

Start with 1, always append curling number

1    1    2  
 1    1    2    2    2    3  
 1    1    2  
 1    1    2    2    2    3    2  
 1    1    2  
 1    1    2    2    2    3  
 1    1    2  
 1    1    2    2    2    3    2    2    2    3    2    2    2    3    3    2  
 1    1    2  
 .    .    .    .    .    .

$$a(220) = 4$$

| G               | curling number |
|-----------------|----------------|
| 1               | 1              |
| 1 1             | 2              |
| 1 1 2           | 1              |
| 1 1 2 1         | 1              |
| 1 1 2 1 1       | 2              |
| 1 1 2 1 1 2     | 2!             |
| 1 1 2 1 1 2 2   | 2              |
| 1 1 2 1 1 2 2 2 | 3!             |

(A090822)

Is there a 5 in G?

300,000 terms: no 5

$2 \cdot 10^6$  terms: no 5

$10^{120}$  terms: no 5

NJAS, FvdB: first 5 at about term  $10^{10^{23}}$

First  $n$  appears at about term

$n - 1$   
...  
5  
4  
3  
2  
2

**(F.v.d. Bult et al., J. Integer  
Sequences, 2007)**

(A090822)



## **Gijswijt, continued**

NOTE! The Curling Number Conjecture would imply that Gijswijt's sequence  $G$  is universal: every starting sequence  $S$  not containing a 1 will eventually merge with  $G$ , that is, it will eventually become  $STG$  for some sequence  $T$



## **Gijswijt, continued**

Proofs could be simplified if Curling Number  
Conjecture were true

How far can you get with an initial  
string of  $n$  2's and 3's  
(before a 1 appears)?  
Call this  $\mu(n)$  (or  $\text{mu}(n)$ )  
(the number of added terms before hitting a 1)

(A217208)

# What's the best start with n 2's and 3's?

**n=4: best start is S = 2323 extending to T = 2223 then 1, so  $\mu(4) = 4$**

**n=8: best start is S = 23222323 extending to T of length 58  
22232223222322232322232223222322232223232223222322332  
then 1, so  $\mu(8) = 58$**

**n=22: best start is S = 2322322323222323223223 extending to  
T of length 120 then 1, so  $\mu(22) = 120$**

0, 2, 2, 4, 4, 8, 8, 58, 59, 60, 112, 112, 112, 118, 118, 118, 118  
118, 119, 119, 119, 120, 120, 120, 120, 120, 120, 120, 120, 120,  
120, 120, 120, 120, 120, 120, 120, 120, 120, 120, 120, 120,  
120, 120, 120, 120, 131, 131, 131, 131, 131, 131, 131, 131,  
131, 131, 131, 131, 131, 131, 131, 131, 131, 131, 131, 132, 132,  
132, 132, 132, 132, 132, 132, 133, 173, 173, 173, 173

$\mu(n)$  for  $n \geq 1$   
(A217208)

We have exact values of  $\mu(n)$  for  $n \leq 48$ ,  
and strong conjectures for  $n \leq 80$  (Ben Chaffin)

**Problem 2026.2:**

**What is  $\mu(n)$  for  $n > 48$ ?  
How does it grow?**

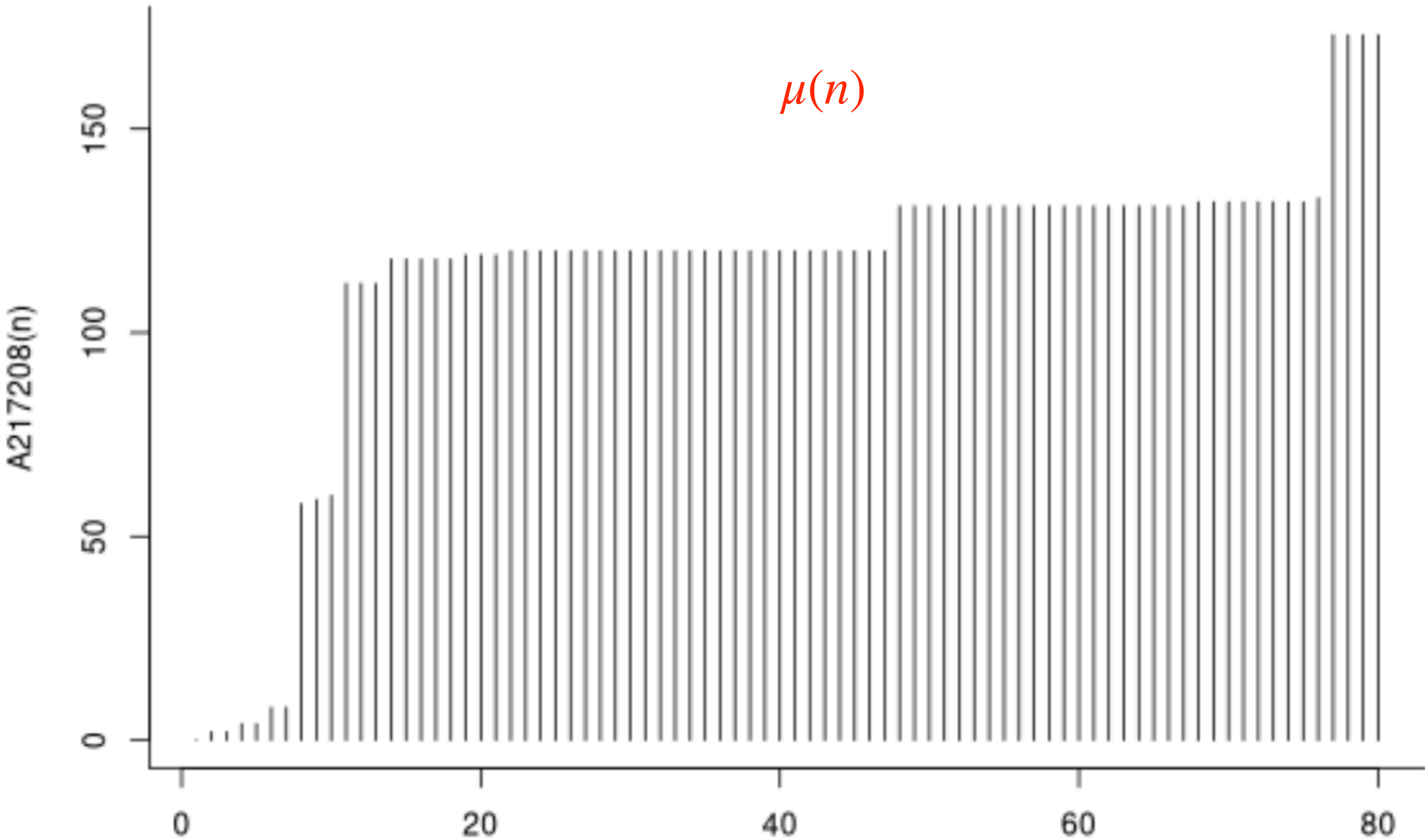
**What are these exceptional  
starting sequence?**

**Find how to construct and  
generalize them!**

**Conjecture:: It is a good idea  
to assume that 33 does not  
appear in the starting sequence,  
which should therefore  
consist of short runs of 2's  
separated by single 3's.**

(A217208)

Pin plot of A217208(n)





# 3. RUNS, RUNS, RUNS

A “run” is a maximal string of consecutive identical symbols,  
Tossing a coin: H H H T T H H H H has runs of 3 Heads, 2 Tails and 4 Heads.  
Its RUNS transform is 3, 2, 4.

## Example 1

Kolakoski’s sequence A000002 (sequence number A2 in the OEIS)  
consists only of 1’s and 2’s, starts with 1, and satisfies  $\text{RUNS}(S) = S$  :  
1, 2, 2, 1, 1, 2, 1, 2, 2, 1, 2, 2, ...

## Example 2

Sol Golomb’s remarkable sequence A001462 : 1, 2, 2, 3, 3, 4, 4, 4, 5, 5, 5, 6, 6, 6, 6, 7, ...  
 $a(n)$  is the number of times  $n$  occurs in the sequence, starting with  $a(1) = 1$ .  
In other words,  $S$  starts with 1, the  $n$ -th run consists of  $n$ ’s, and  
the sequence satisfies  $\text{RUNS}(S) = S$ . Also let  $\phi$  = golden ratio, then  
$$a(n) = \phi^{2-\phi} n^{\phi-1} + \dots$$

## Example 3

Zero, One, Two, Three, Four, Five, Six, Seven, Eight, ... have initial letters

Z, O, T, T, F, F, S, S, E, ... with runs of length 1, 1, 2, 2, 2, 1, ... (A396299)

1, 1, 2, 2, 2, 1, 1, 1, 1, 2, 2, 2, 1, 1, 20, 20, 20, 10, 10, 100,  
200, 200, 200, 100, 100, 1000, 2000, 2000, 2000, 1000, 1000, 1000, 1000,  
2000, 2000, 2000, 1000, 1000, 20000, 20000, 20000, 10000, 10000,  
100000, 200000, 200000, 200000, 100000, 100000, 1000000

# RUNS, RUNS, RUNS (Cont.)

(A306211)

Start with  $S = 1$   
Append RUNS( $S$ ) to  $S$   
Repeat!

Successive stages are

1  
1 1  
1 1 2  
1 1 2 2 1  
1 1 2 2 1 2 2 1  
1 1 2 2 1 2 2 1 2 2 1 2 1  
1 1 2 2 1 2 2 1 2 2 1 2 1 2 1 1 1

1,2,3,4,5 appear at terms 1, 3, 37, 60, 255 (A323829)

Problem 2026.3: Conjecture 1: 5 is max term;  
Conjecture 2: sequence is unbounded.

Which is true?

Are there any universal sequences here?

Are there any attractors?

After 65 generations (10228800161220  
terms), still no 6 (Ben Chaffin)



# 4. “LES” Sequences

**Lexicographically Earliest Infinite Sequence of distinct  
positive numbers  
with property that \*\*\*\*\***

If no other condition, we get 1, 2, 3, 4, 5, 6, 7, ...

A000027

(The earliest of them all!)

Lexicographic order means 1,3,6, ... comes before 1,3,10, ...  
(this notion is not base-dependent)

# EKG Sequence (A64413)

The classic LES sequence:

1, 2, 4, 6, 3, 9, 12, 8, 10, 5, 15, ...

$$a(1)=1, a(2)=2,$$

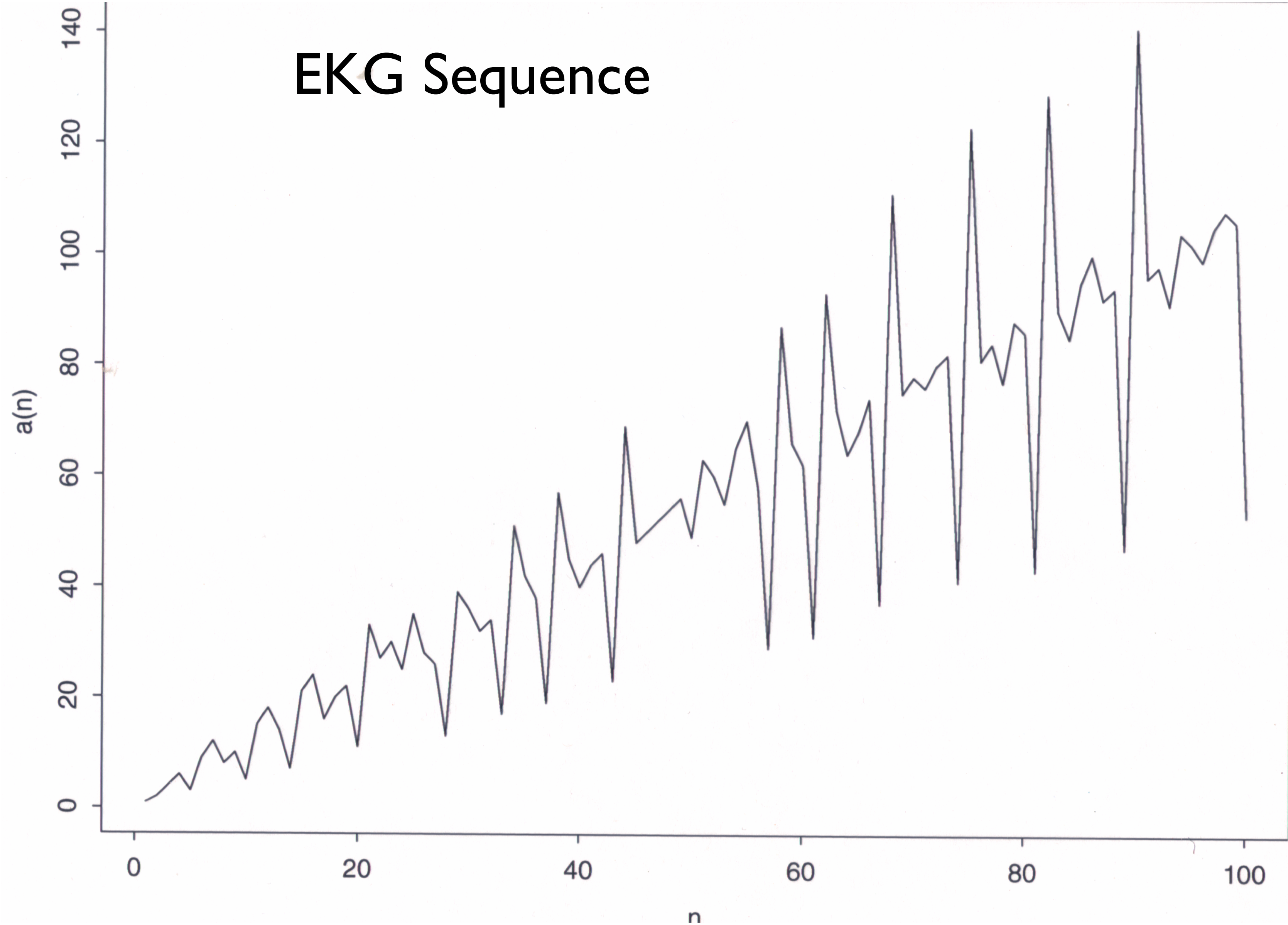
$$a(n) = \min k \text{ such that}$$

- $\text{GCD} \{ a(n-1), k \} > 1$
- $k$  not already in sequence

- Jonathan Ayres, 2001

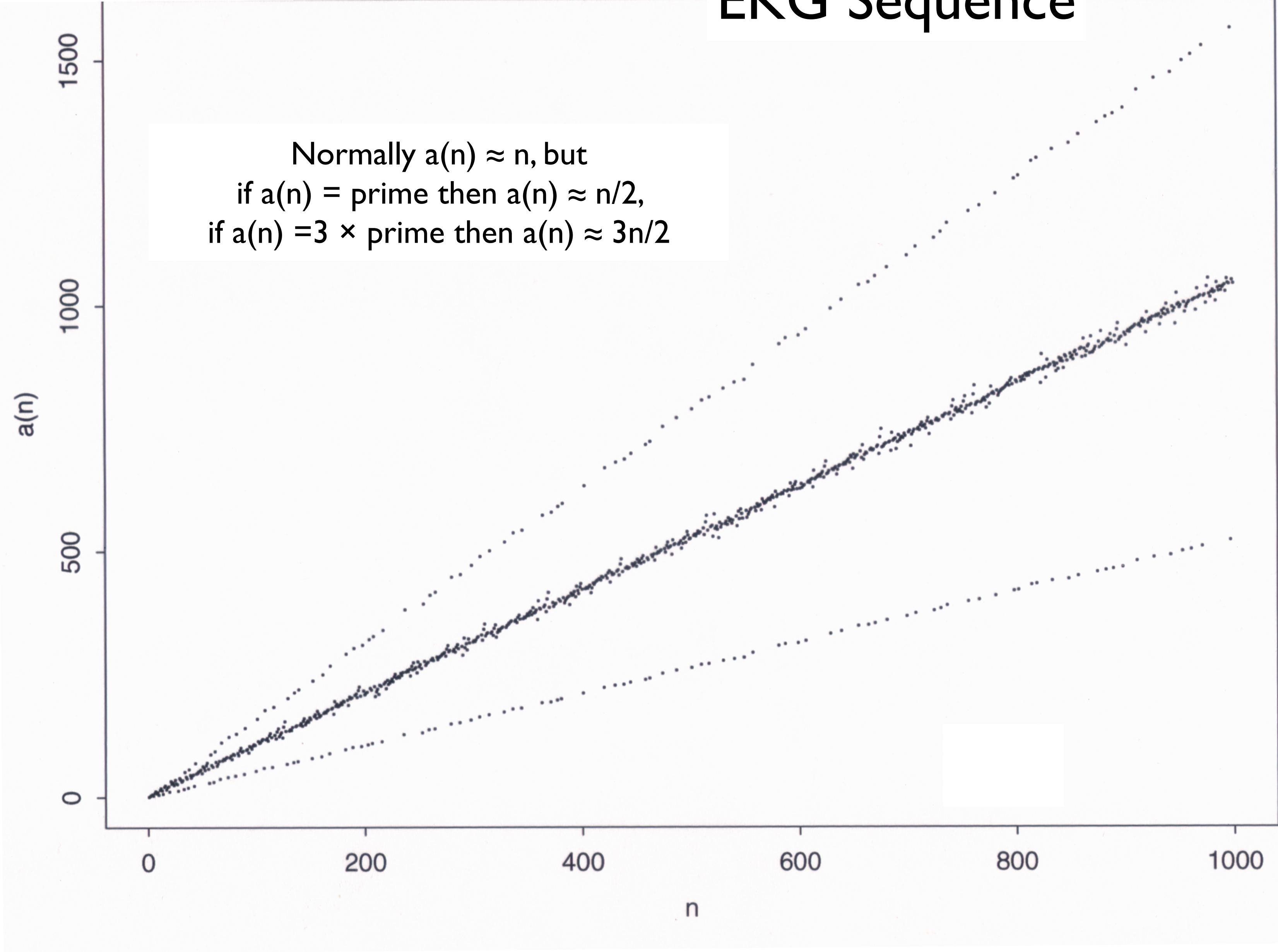
- Analyzed by Lagarias, Rains, NJAS, Exper. Math., 2002

- **Gordon Hamilton, Videos related to this sequence:**





EKG Sequence





**Question: Does every number  
appear in the EKG sequence?**

**High school student:  
That's obvious!**

**Me: I don't think so!**



# The EKG sequence (cont)

A64413

## Theorem: Every positive number appears

Proof:

There are several steps. (i) Sequence is infinite (easy).

(ii) Let  $w(m) = n$  such that  $a(n)=m$ , or  $-1$  if  $m$  is missing from sequence.

Let  $W(m) = \max w(i)$ ,  $i \leq m$ . Then if  $n > W(m)$ ,  $a(n) > m$ .

(iii) Let  $p = \text{prime}$ . Exists  $n$  such that  $p \mid a(n)$ . If not, no prime  $q > p$  can divide any term either, because if  $a(n) = qk$  then  $pk$  would be a smaller choice.

So all terms are products just of primes  $< p$ .

Choose  $n > W(p^2)$ , say  $a(n) = qk$ , for prime  $q < p$ , so  $qk > p^2$ .

Let  $k' = \text{smallest factor of } k$ .

Then  $pk' < p^2 < qk$  was a smaller candidate for  $a(n)$ , contradiction.

(iii') In fact  $p$  divides infinitely many terms. If not, pick  $p^k \gg$  any multiple of  $p$ , find huge prime  $Q \gg p^k$ , then  $p^k$  better choice than  $Q$ .

(iv) When  $p$  first divides  $a(n)$ , say  $a(n) = kp$ , then  $k$  is a prime  $< p$ .

If  $k = 2$  we have  $a(n)=2p$ ,  $a(n+1)=p$ . Otherwise we have  $a(n)=kp$ ,  $a(n)=p$ ,  $a(n+1)=2p$ . Either way we see adjacent terms  $p$  and  $2p$ .

## The EKG sequence (cont)

### Proof (continued)

(v) If for some prime  $p$  there are infinitely many multiples of  $p$ , then all multiples of  $p$  are in the sequence.

If not, let  $kp$  = smallest missing multiple of  $p$ .

Find  $n > W(kp)$  with  $a(n) = mp$ . Then  $kp < mp$  was a smaller candidate for  $a(n)$ , a contradiction.

(vi) If for some prime  $p$  all multiples of  $p$  are in the sequence then all numbers appear. For suppose  $k$  is smallest missing number. Find  $n > W(k)$  such that  $a(n)$  is multiple of  $kp$ . Then  $k$  was smaller candidate for  $a(n)$ , contradiction.

(vii) By (iii) and (iv) we see infinitely many multiples of 2, and by (v) and (vi) we see all numbers.

**QED**

# More LES examples

EKG sequence:  $\gcd(a(n), a(n-1)) > 1$  for  $n > 2$ :

1, 2, 4, 6, 3, 9, 12, 8, 10, 5, 15, ...

**A64413**

The Yellowstone Permutation:  $\gcd(a(n), a(n-2)) > 1$  and  
 $\gcd(a(n), a(n-1)) = 1$  for  $n > 3$ :

**A98550**

1, 2, 3, 4, 9, 8, 15, 14, 5, 6, 25, 12, 35, 16, 7, 10, 21, ...

The Enots Wolley Sequence:  $\gcd(a(n), a(n-1)) > 1$  and  
 $\gcd(a(n), a(n-2)) = 1$  for  $n > 2$ :

**A336957**

1, 2, 6, 15, 35, 14, 12, 33, 55, 10, 18, 21, 77,



Not 4 !



# The Yellowstone Permutation

**A098550**

$a(n)$  = smallest number not yet in seq. such that  
 $\gcd(a(n-2), a(n)) > 1$ ,  $\gcd(a(n-1), a(n)) = 1$ .

1, 2, 3, 4, 9, 8, 15, 14, 5, 6, 25, 12, 35, 16, 7, 10, 21, 20, 27

**Theorem(\*): Every positive number appears**

- Proof:
1. Sequence is infinite
  2. Given  $B$ , exists  $n_0$  s.t.  $n > n_0$  implies  $a(n) > B$ .
  3. Infinitely many different primes divide the terms.
    4. Any prime divides some term.
    5. Any  $p$  divides oo many terms.
  6. Every prime  $p$  appears naked in sequence.
    7. All numbers appear.

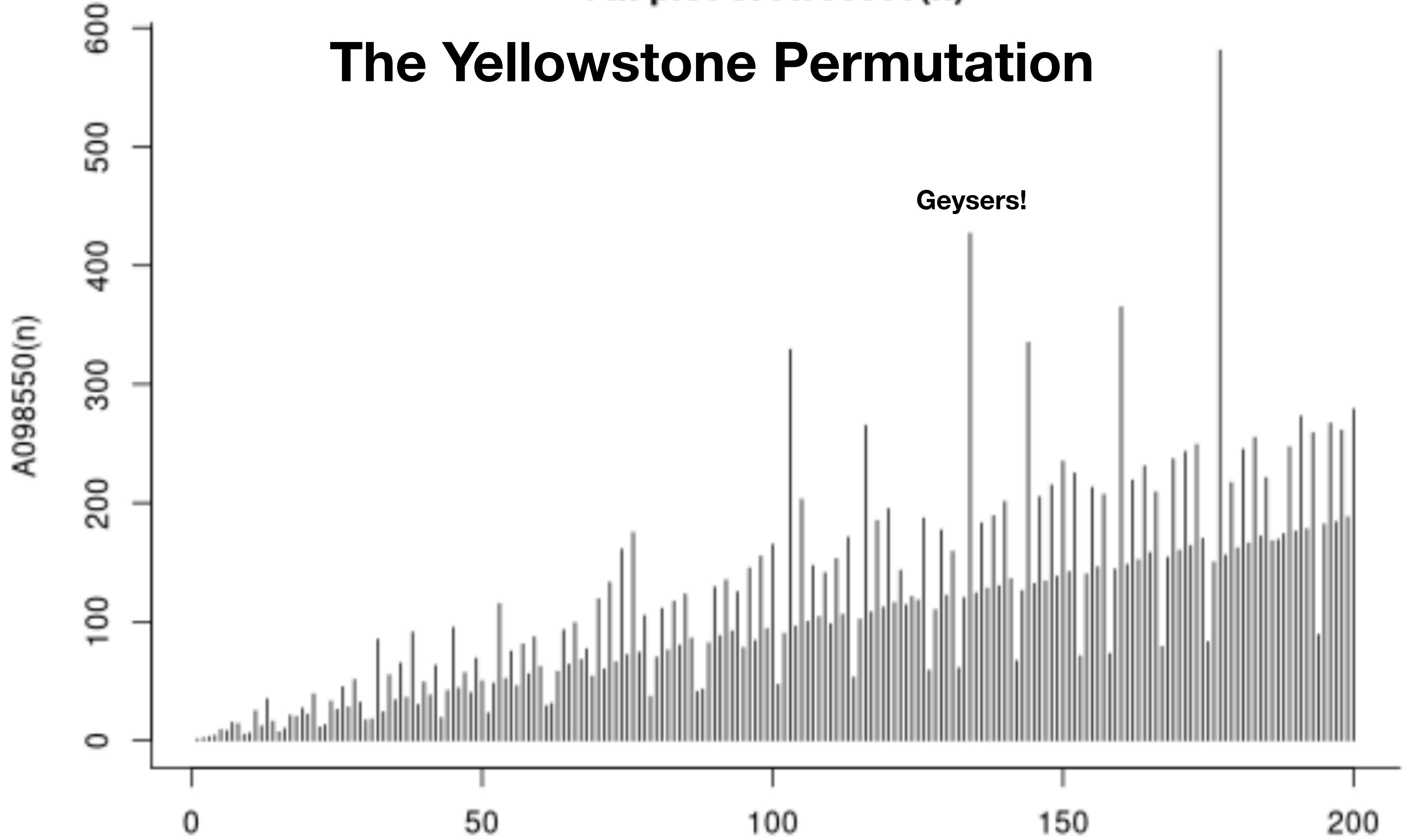
**QED**

(\*) Applegate, Havermann, Selcoe, Shevelev, NJAS, Zumkeller, 2015

**A098550**

Pin plot of A098550(n)

# The Yellowstone Permutation





# The Enots Wolley Sequence

A336957

**The Enots Wolley Sequence:  $\gcd(a(n), a(n-1)) > 1$   
and  $\gcd(a(n), a(n-2)) = 1$  for  $n > 2$ :**

**Suggested by Scott Shannon (Melbourne) in August 2020**



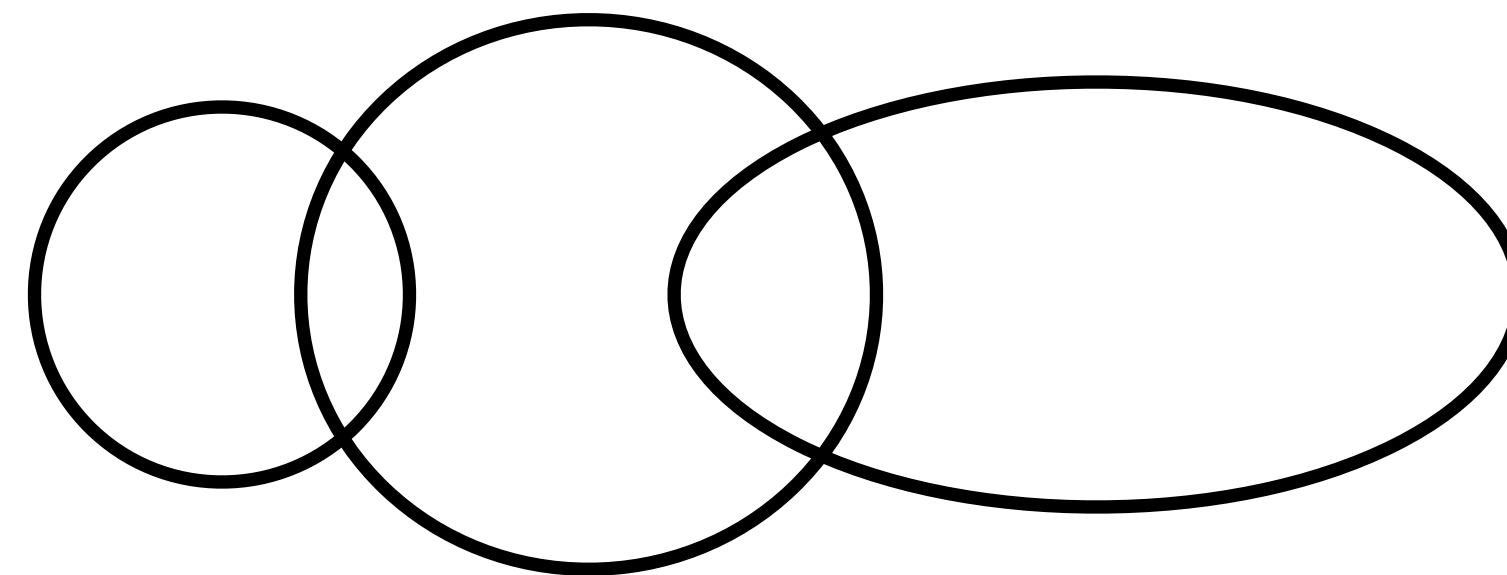
**The Australian politician Enots (“Snotty”) Wolley?**



# The Enots Wolley Sequence

A336957

| $n$    | 1 | 2 | 3 | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
|--------|---|---|---|----|----|----|----|----|----|----|
| $a(n)$ | 1 | 2 | 6 | 15 | 35 | 14 | 12 | 33 | 55 | 10 |
| 2 ?    |   | ✓ | ✓ |    |    | ✓  | ✓  |    |    | ✓  |
| 3 ?    |   |   | ✓ | ✓  |    |    | ✓  | ✓  |    |    |
| 5 ?    |   |   |   | ✓  | ✓  |    |    |    | ✓  | ✓  |
| 7 ?    |   |   |   |    | ✓  | ✓  |    |    |    |    |
| 11 ?   |   |   |   |    |    |    |    | ✓  | ✓  |    |



$a(n-2)$

$a(n-1)$

$a(n)$

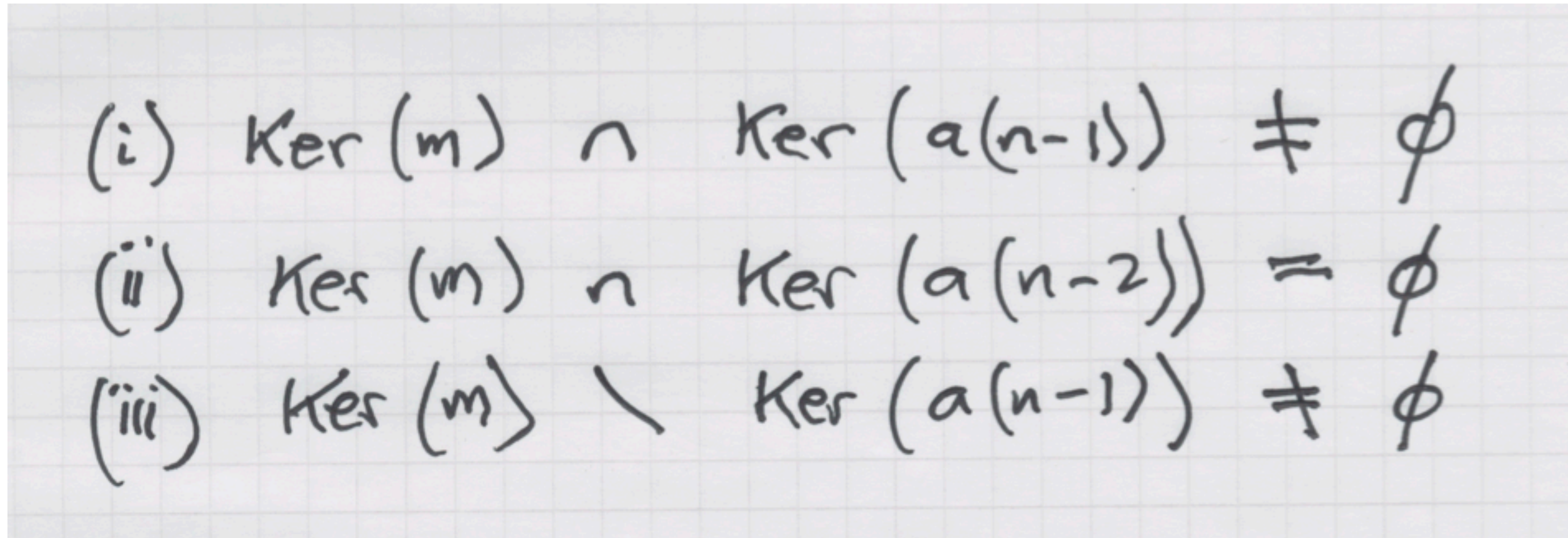


# The Enots Wolley Sequence (cont.)

A336957

$\text{Ker}(n) :=$  set of primes dividing  $n$ .

**Theorem 1:** For  $n > 2$ ,  $a(n)$  = smallest  $m$  not in sequence such that:



Handwritten mathematical conditions on grid paper:

- (i)  $\text{Ker}(m) \cap \text{Ker}(a(n-1)) \neq \emptyset$
- (ii)  $\text{Ker}(m) \cap \text{Ker}(a(n-2)) = \emptyset$
- (iii)  $\text{Ker}(m) \setminus \text{Ker}(a(n-1)) \neq \emptyset$

**Proof:**  $m$  exists, is unique, and  $a(n)$  can't be less than  $m$ .

# The Enots Wolley Sequence (cont.)

A336957

Theorem 2: For  $n > 2$ ,  $a(n)$  is divisible by at least two different primes.

So not a permutation of pos. integers.

**No primes or prime powers except 1 and 2.**

**Open Problem 2026.4: Show that sequence consists of 1, 2, and all numbers with at least 2 distinct prime factors.**

- Theorem 3:
- (a) Sequence is infinite.
  - (b) For any prime  $p$ ,  $p$  divides some term.
  - (c) For any prime  $p$ ,  $p$  divides infinitely many terms.
  - (d) For any odd prime  $p$ , there is a term  $2p$ .

**Conjecture : All even numbers (except  $2^k$ ,  $k > 1$ ) appear.**

# Set-Theory Versions of LES Sequences

**5 and 10 are disjoint**

**101  
1010**

**6 and 10 intersect**

**110  
1010**

**(Represent sets by binary numbers)**



Set-theory analog of EKG  
sequence A064413

$a(n)$  = smallest unused number  
that intersects  $a(n-1)$

| $n$ | $a(n)$  | $a(n)$ | set     |
|-----|---------|--------|---------|
| 1   | 1       | 1      | 1       |
| 2   | 1 1     | 3      | 1, 2    |
| 3   | 1 0     | 2      | 2       |
| 4   | 1 1 0   | 6      | 2, 3    |
| 5   | 1 0 0   | 4      | 3       |
| 6   | 1 0 1   | 5      | 1, 3    |
| 7   | 1 1 1   | 7      | 1, 2, 3 |
| 8   | 1 0 0 1 | 9      | 1, 4    |
| 9   | 1 0 0 0 | 8      | 4       |
| 10  | 1 0 1 0 | 10     | 2, 4    |
| 11  | 1 0 1 1 | 11     | 1, 2, 4 |
| 12  | 1 1 0 0 | 12     | 3, 4    |
| ... |         |        |         |

A115510

Easily seen to be a  
permutation of  
pos. integers

Set-theory analog of  
Yellowstone A098550

$a(n)$  = smallest unused number  
that intersects  $a(n-2)$  but not  $a(n-1)$

| $n$ | $a(n)$    | $a(n)$ | set  |
|-----|-----------|--------|------|
| 1   | 1         | 1      | 1    |
| 2   | 1 0       | 2      | 2    |
| 3   | 1 0 1     | 5      | 1, 3 |
| 4   | 1 0 1 0   | 10     | 2, 4 |
| 5   | 1 0 0     | 4      | 3    |
| 6   | 1 1       | 3      | 1, 2 |
| 7   | 1 1 0 0   | 12     | 3, 4 |
| 8   | 1 0 0 0 1 | 17     | 1, 5 |
| 9   | 1 1 0     | 6      | 2, 3 |
| 10  | 1 0 0 1   | 9      | 1, 4 |
| 11  | 1 0 0 1 0 | 18     | 2, 5 |
| 12  | 1 0 0 0   | 8      | 4    |

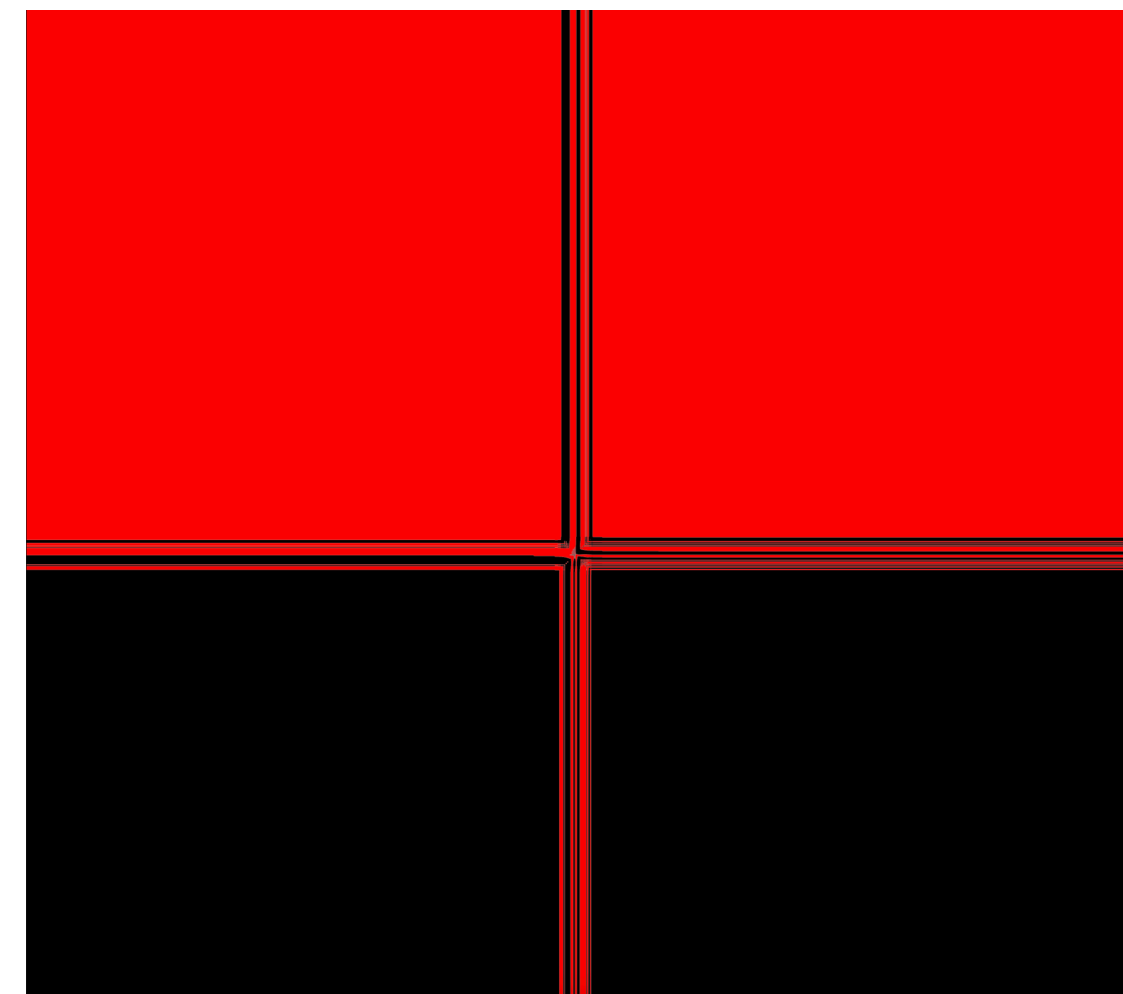
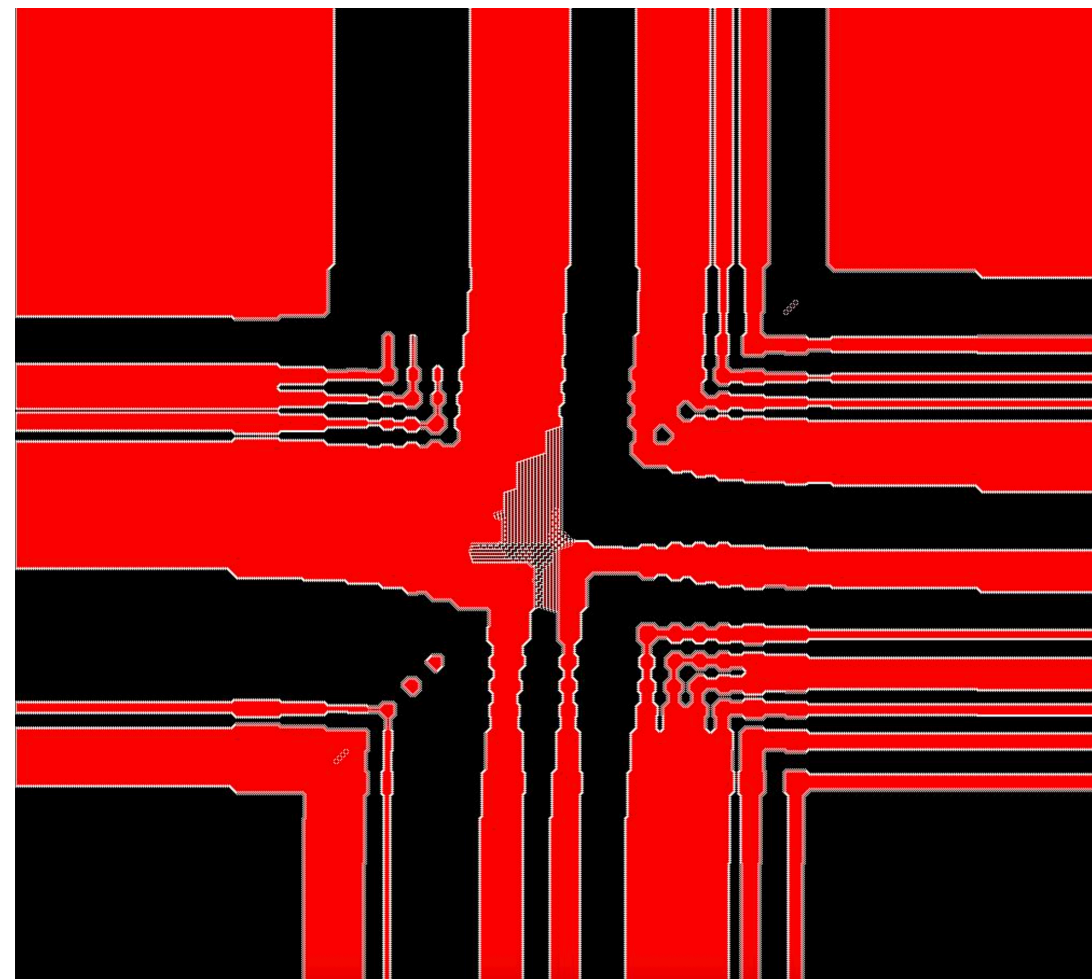
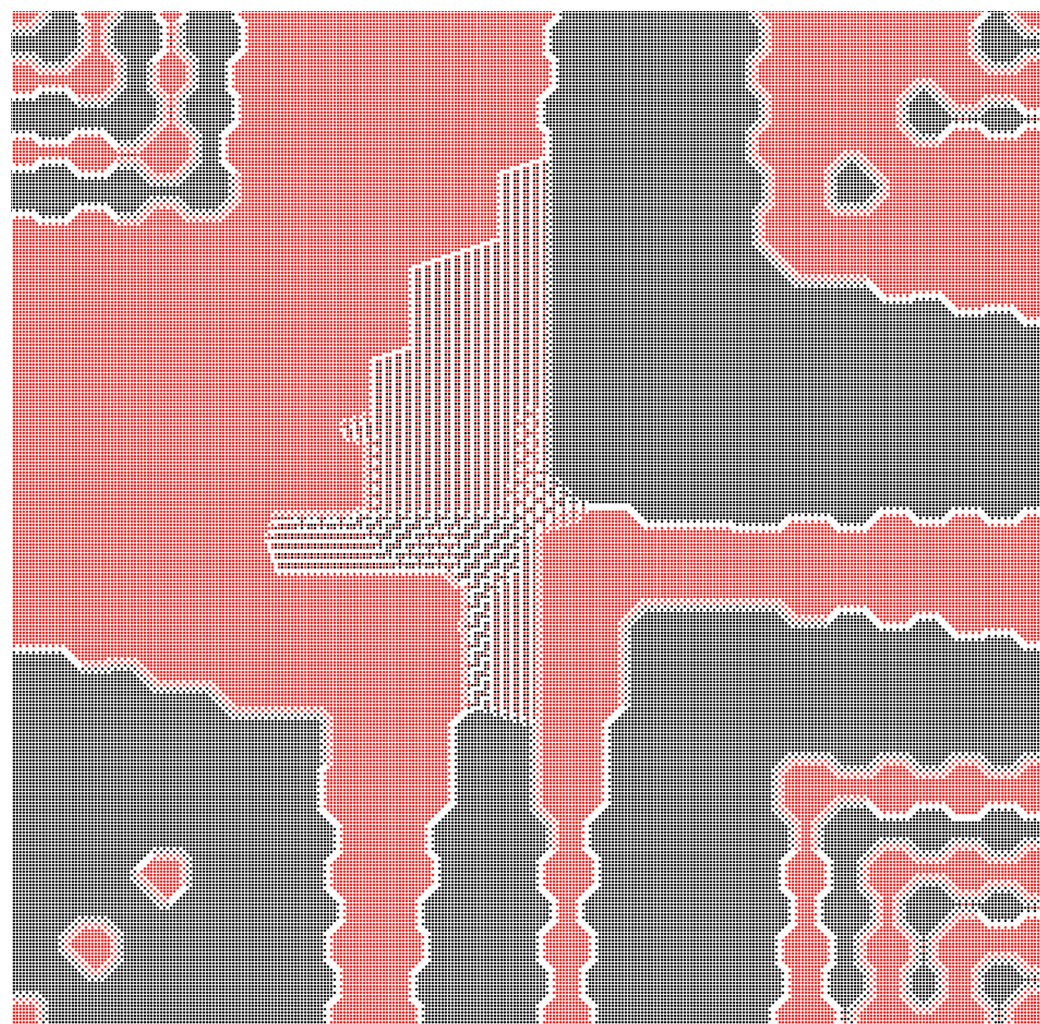
A252867

Open Problem 2026.5:  
Show that A252867 is a permutation  
of the positive integers



**ASIDE: The NumberPhile video about the Red and Black Knights**  
**What happens when you place non-attacking Red and Black Knights**  
**on a square spiral on an infinite chess-board?**

Brady Haran, Jonas Karlsson, and N. J. A. Sloane,  
<a href="https://youtu.be/UiX4CFIiegM">Red & Black Knights (extraordinary result)</a>;  
<a href="https://youtu.be/VgmDuBCayPw">Amazing Chessboard Patterns (extra)</a>,  
YouTube Numberphile videos, May 2026



Jonas Karlsson and Michael Branicky

See [A392177](#) and [A392178](#)



|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 64 | 63 | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 89 |
| 65 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 55 | 88 |
| 66 | 37 | 16 | 15 | 14 | 13 | 12 | 29 | 54 | 87 |
| 67 | 38 | 17 | 4  | 3  | 2  | 11 | 28 | 53 | 86 |
| 68 | 39 | 18 | 5  | 0  | 1  | 10 | 27 | 52 | 85 |
| 69 | 40 | 19 | 6  | 7  | 8  | 9  | 26 | 51 | 84 |
| 70 | 41 | 20 | 21 | 22 | 23 | 24 | 25 | 50 | 83 |
| 71 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 82 |
| 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 |



**LES sequence of binary numbers  
such that no two 1's are  
a knight's move apart**

A394166

**This is forbidden:**

**\*1**

**\*\***

**1\***

**and so is**

**\*\*1**

**1\*\***

**(Rémy Sigrist, May 2026)**

| n   | A 394166 |  |  |  |  |  |  |     |   |     |
|-----|----------|--|--|--|--|--|--|-----|---|-----|
| 0   |          |  |  |  |  |  |  | 0   |   | 0   |
| 1   |          |  |  |  |  |  |  | 1   |   | 1   |
| 2   |          |  |  |  |  |  |  | 1   | 0 | 2   |
| 3   |          |  |  |  |  |  |  | 1   | 0 | 4   |
| 4   |          |  |  |  |  |  |  | 1   | 0 | 8   |
| 5   |          |  |  |  |  |  |  | 1   | 0 | 5   |
| 6   |          |  |  |  |  |  |  | 1   | 0 | 10  |
| 7   |          |  |  |  |  |  |  | 1   | 0 | 16  |
| 8   |          |  |  |  |  |  |  | 1   | 0 | 32  |
| 9   |          |  |  |  |  |  |  | 1   | 1 | 3   |
| 10  |          |  |  |  |  |  |  | 1   | 0 | 33  |
| 11  |          |  |  |  |  |  |  | 1   | 1 | 48  |
| 12  |          |  |  |  |  |  |  | 1   | 0 | 256 |
| 13  |          |  |  |  |  |  |  | 1   | 1 | 6   |
| 14  |          |  |  |  |  |  |  | 1   | 0 | 34  |
| ... |          |  |  |  |  |  |  | ... |   | ... |

**Open Problem 2026.6:**

**Show that every number appears in A394166.  
(Or even show that every power of 2 appears.)**



LES sequence of positive binary numbers placed on square spiral so no two 1's are a knight's move apart

Scott R. Shannon, May 30 2026

A396604

High order bits are placed first.  
When a number ends, the next bit must be an unattacked 1.

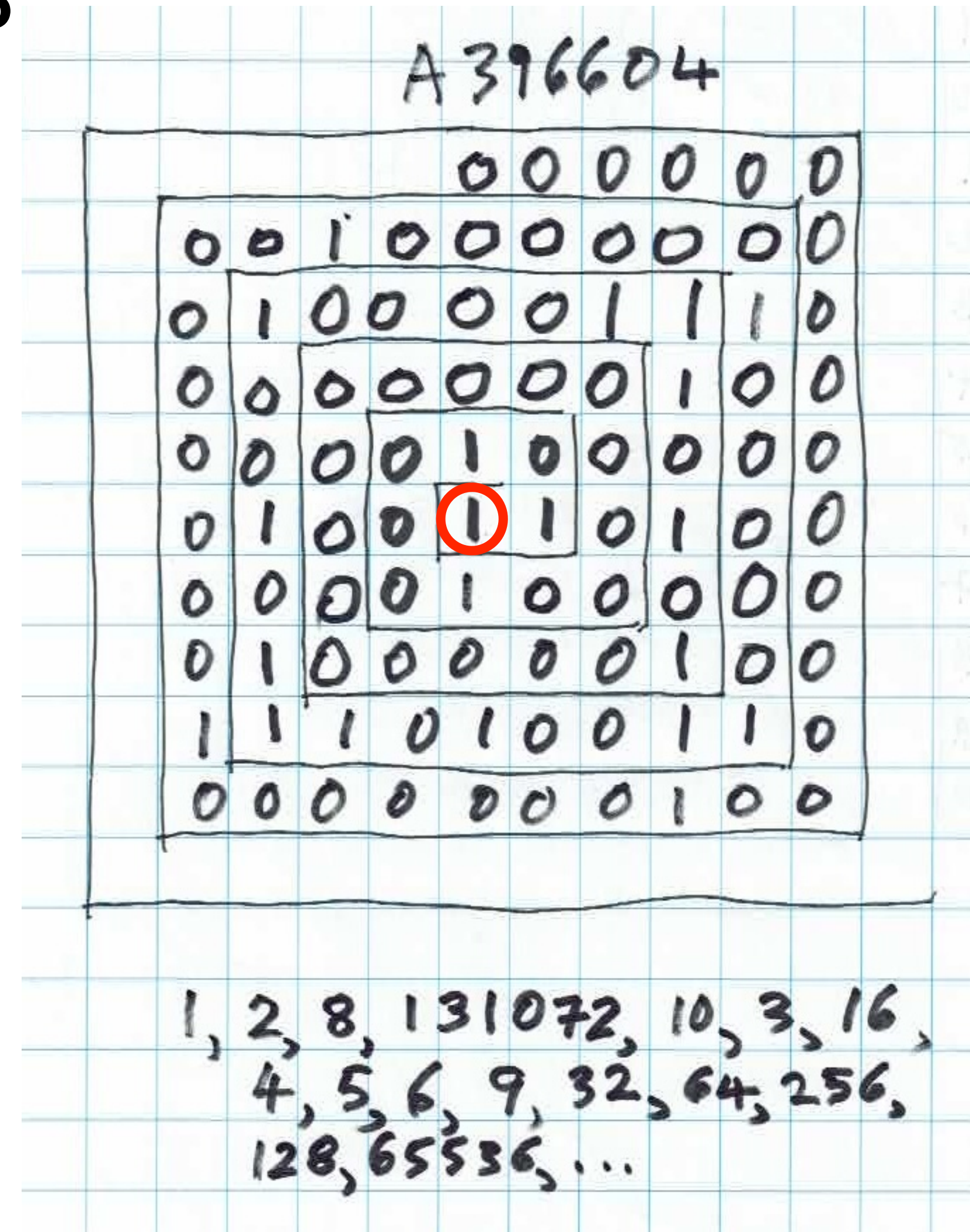
Start:

0100

0110

0100

Open Problem 2026.7:  
Show that every number appears  
in the spiral A396604\_\_





One last LES, a page  
from my notebook,  
Vol. 129

LES, distinct positive numbers,  
partial sums relatively prime  
to partial products

Open Problem 2026.8:  
Show that every even number  
appears in A390314.

When 2n appears

258

3/10/26

A390314 (Scott Shannon)

LES  $\Sigma a_n$  rel prime to  $\Pi a_n$

|                              | A390314 (Scott) |     |    |    |     |      |    |    |    |    |     |     |         |
|------------------------------|-----------------|-----|----|----|-----|------|----|----|----|----|-----|-----|---------|
| $n$                          | 1               | 2   | 3  | 4  | 5   | 6    | 7  | 8  | 9  | 10 | 11  | 12  |         |
| $a(n)$                       | 1               | 2   | 4  | 6  | 10  | 8    | 12 | 16 | 14 | 24 | 30  | 22  | A390314 |
| $\Sigma$                     | 1               | 3   | 7  | 13 | 23  | 31   | 43 | 59 | 73 | 97 | 127 | 149 | A393436 |
| $\Pi$                        | 1               | 2   | 8  | 48 | 480 | 3840 |    |    |    |    |     |     | A393437 |
| $s_{men}$                    | 2               | 4   | 6  | 8  | 8   | 12   | 14 | 14 | 18 | 18 | 18  | 18  |         |
|                              | 1               | 2   | 3  | 4  | 4   | 6    | 7  | 7  | 9  | 9  | 9   | 9   | A393438 |
| smallest missing even number |                 |     |    |    |     |      |    |    |    |    |     |     |         |
| $n$                          | 13              | 14  | 15 | 16 | 17  | 18   | 19 | 20 | 21 | 22 | 23  | 24  | 25      |
| $a(n)$                       | 18              | 26  | 34 | 36 | 20  | 28   | 38 | 40 | 32 | 42 | 46  | 48  | 44      |
| $\Sigma$                     | 167             | 193 |    |    |     |      |    |    |    |    |     |     |         |
| $\Pi$                        |                 |     |    |    |     |      |    |    |    |    |     |     |         |
| $s_{men}$                    | 20              | 20  |    |    |     |      |    |    |    |    |     |     |         |
|                              | 1               | 2   | 3  | 4  | 5   | 6    | 7  | 8  | 9  | 10 | 11  | 12  | A393439 |



# 5. Extras

## Fibonacci-type primes (from a 16-year old student)

$a(1) = 2, a(2) = 3$ ; thereafter  
 $a(n+2) = \text{nearest prime to } a(n)+a(n+1)$ .  
In case of a tie, choose the smaller prime

2, 3, 5, 7, 11, 17, 29, 47, 73, 113, 181, 293, 479, 773, 1249, 2017, 3271, 5281,  
8543, 13829, 22369, 36191, 58567, 94747, 153313, 248057, 401371, ...

A394720

Have 4785 terms (Alois Heinz).  
But which primes are they, etc?  
Have index  $\pi(a(n))$  for only first 100.

1, 2, 3, 4, 5, 7, 10, 15, 21, 30, 42, 62, 92, 137, 204, 306, 462, 701, 1066, 1634, 2504, 3842,

A396176



4785

9262717739124080509196606963458459351285356119873007722955  
8694572573137029952757573255751147286411568535924410892552  
7186798364606276464960016920115348803985850409436531440169  
3487326397507583278706754525904221702008105318160795056230  
0327582746744583675054969210429983173026472929935243556908  
2127004410224748206029081439167547326736618965540751375378  
0618960627259153546014214780511758855724373883953726634030  
4050538042168292574737753793520201881446590913106928280999  
0593669963360658415497741351649073617093694076463789538369  
2542893586021442447236235779948604311077414354735686381566  
4171638359048288594366658768442369798759669190563939598311  
3090471249492510770521560744410542959552120657047002965371  
5956434586123738050099853375520218602656188685256994529608  
2608687178376247844665868619206903543150789592753559036492  
9481194895038532478293758226436218042533010117282077870546  
4756308990204808753006574923934067446414670159038300693219  
3419972933308854774436401884701653941069988199147176355554  
27438776041739

# Extras (cont.)

**Why do my friends have more friends than I do?**

**See A394696. Also A394695, A393153, etc.**

**Extras (cont.)**

# **The Scariest Sequence in the World**



# Extras (cont.)

The scariest  
sequence in the world:  
[A360521](#) (a million terms)

It is worth going to [A360521](#) and  
looking at all the illustrations!

The compser Gustavo Diaz-Jerez  
used this sequence as the basis for  
his work Metaludios: [Fuzzball](#),  
(a piece dedicated to me)  
There is a performance by the composer  
on [Youtube](#).

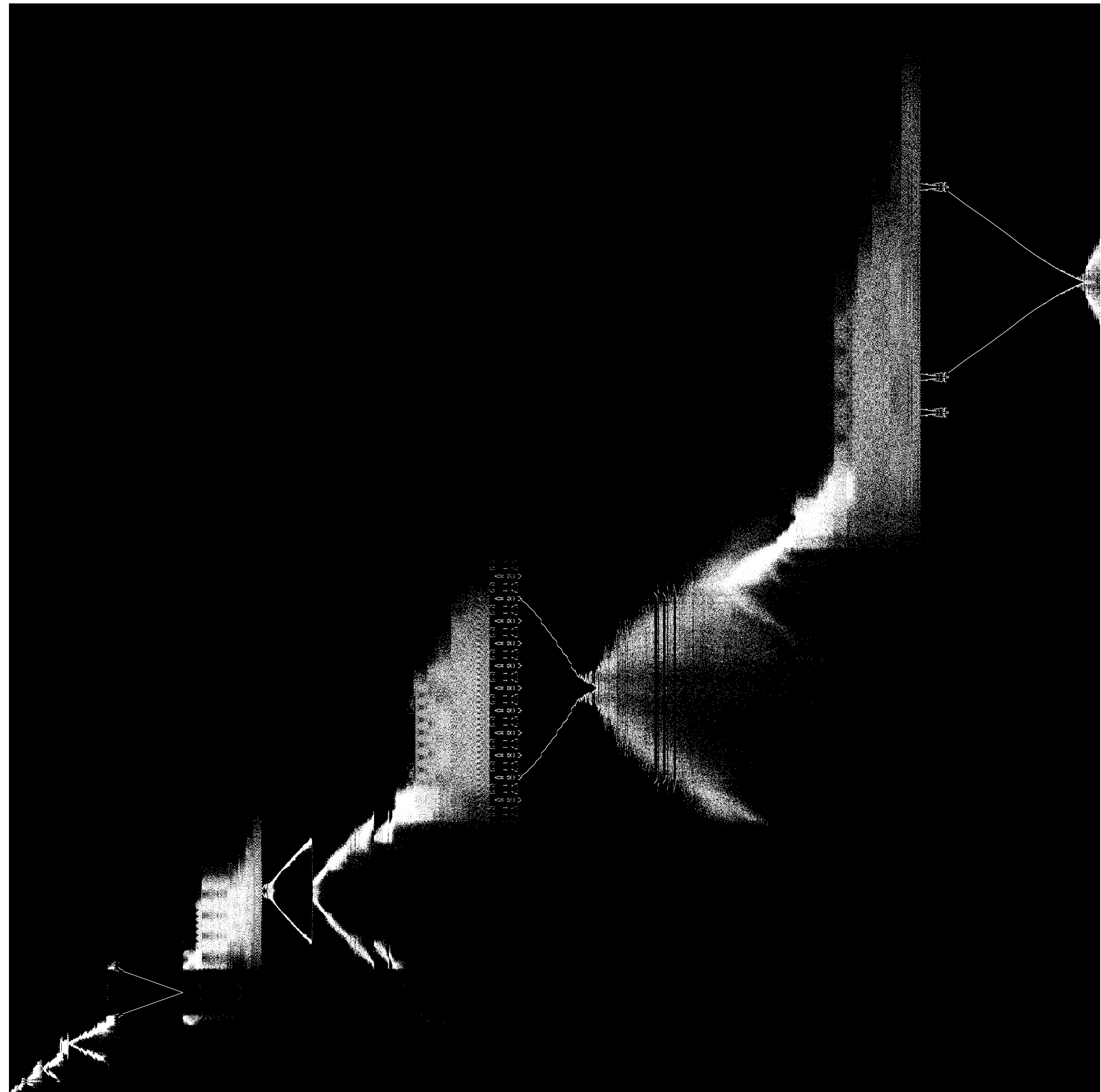


Image: Scott Shannon