Collatzconjecture & Mobiusring

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Abstract

Collatzconjecture alsonamed Sizuo Kakutani assumption, or Hail assumption, the content as below : For a natural number, if it is even number, then divide by 2, if it is odd number, then multiply by 3 and add 1, with regard to get result, same operating again &again , Finally, it will falling to 1 resultIn the proof, Changenumber to binary , then to fold thenumber like folioused 0,1 form, combin e Zhouyi Bagua toanalysethenumberframe,togetwhenx=3,then3x +1=10, then it will close Collatz conjecture.

Keywords: Sizuo Kakutani Assumption, Sizuo Kakutani Regulation, Life Formula, Equal Volume Transformation, Zhouyi, Bagua, Qian. Mobiusring.

The problem of halting Turing machine
If when input 000000, the Turing machine can shut down.
As Sizuo Kakutani assumption rule, if have number $(S+1)$ $(S-1)$, follow the rule (S= integer)

Then: $A=3(S+1)+1$ $T=3(S-1)+1$

$A+T=6S+2$

From Sizuo Kakutani assumption rule if $A+T$ equal even number, should be divided by 2

Mark by: $L(S)=(A+T)/2=3S+1$

When-5, -7, -17, Run $3X+1$ (Sizuo Kakutaniassumption rul) when calculation run, it will fall into circulating ring, and from negative number operation rules, change Sizuo Kakutani assumption rule, Negative odd repeat implements

$3X-1$, Negative even number repeatdivided by 2
$G=3(S''+1)-1$
$C=3(S''-1)-1$
$G+C=6S''-2$
Mark by: $F(S'')=(G+C)/2=3S''-1$

Then: $A+G+T+C=2*[L(S)+F(S'')]$

Use Integer Y to show, $Y=\log(N*1/N*X)$

Then$-Y=-\log(N*1/N*X)$

$A+T=6Y+2$
$G+C=6(-Y)-2$
$L(S)+F(S'') =3\log N+3\log(X/N)$

$+1+3\log N+3\log[1/(NX)]-1$

$=6\log N+3\log(1/N*1/N)$

$=6\log N-6\log N=000000$

The same: $A+T+G+C=L(S)+F(S'')$

Theorem 1: after reduced by one half, property have no change.

Integer S Convert to binary system, thenreducebyonehalf like foliocanget start bit: 0,1,10,11; get 4 types And 0=00; 1=01; it is knowable 00, 01, 10, 11 is parallel with integer 0,1,2,3.

Arrange "Gossip" from up down (vertical) to left & right (horizontal), can get 64 divinatory symbols. It will get AGCT genetic code is parallelism with 64 divinatory symbols.

○○ A
●○ C
●● G
○● T
AAAis in64divinatorysymbols.

AAA
○○
○○
○○

GGGis in64divinatorysymbols.
GGG
●●
●●
●●
Rankit, get
○○○
A○
○○●
A1
●○○
C○
●○●
C1
○●○
T○
○●●
T1
●●○
G○
●●●
G1
symbol"Sky"inChina.MeanPositive.
AAA isarrayinvertical:
○○
○○
○○
Equal to:
AOAO isarrayinhorezontal
Oooooo
And
AAA=AOAO
Because: AAA=AOAO
Therefore: $x3 = 2X2$ (1)
$3x=2x+2$ (2)
Because Life Formula Equalvolumetransformation
A=G   T=C
So: A+T=G+C
The same: $x3 +3x=2x2 +2x+2$
Therefore: $3x+1=2x2 +2x+3-x3$
When: X=2, itisequality.
If x=3, cancalculate
10=0
Checkout 10, then,$10\rightarrow5\rightarrow 16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$.
Then: 10 will fall to 1 also.
- 10=0,
$-10\div2=- 5$,
- $5x3+1=- 14$
$-14\div2=-7$
$-7x3+1=-20$
$-20\div2=-10$
$-10\div2=-5$

About infinity number, ∞ carryoncount backwards

S=1/∞ record: S=000000

Because up down arrange (array in vertical) equal to left & right (array in horizontal,

Get 000000= 00

        00
        00
○○
○○
○○

The same: AOAO=AAA
The same: 2A2 =A3
2A+2=3A

1+2
Then A3 +3A=2A2 +2A+2
3A+1=2A2 +2A+3-A3

If A=2 Itisequality.
If A=3 then
3A+1=2A2 +2A+3-A3
10=0
Mark by: [+= O]

It means run Sizuo Kakutani assumption rules calculation by computer when infinity number, will overflow frominternal memory cannot calculate& verify.

For example, 20 Convert to binary system is 10100, after reduced by one half, the start bit is 1 or 0. if have theorem 1 that after reduced by one half, property have no change. 20 Convert to binary system is 10100, reduced by one half,

Remarkby: S=E(s)

Whenstart bit is 1, S=E(s), S =2 mod (3)

Whenstart bit is 0, S/2, S =0 mod (2)

And S =0, S-1, S+1, inputtoSizuoKakutaniassumptionrules, get:

A=3(0+1) +1; T=3(0-1) +1;

So, A+T=2.

Therefore haverule, L (0) =1.

When 20 is written in binary, it can be expressed mathematically as follows: For S = E(s), when the starting digit is 1, it is 1; when S = E(s) and s = 2 mod(3), the starting digit 0 is 0; when s/2 and s = 0 mod(2), substituting s = 0, s- 1, s + 1 into the Collatz rule, we can know that A = 3(0 + 1) + 1, T = 3(0- 1) + 1. Since A+ T = 2, there exists the Collatz rule L (0) = 1, that is, write 0 on one side

of a paper tape and 1 on the other side, and then twist and connect them, and we can know that the Collatz operation rule is like a Möbius strip.

The Collatz conjecture converts a number into binary and folds it in half. There are four possibilities for the starting number: 1, 0, 10, 11 (in binary). Assuming that after the iterative operation of the Collatz conjecture, it finally falls back to the starting number, then from L (0) = 1, that is, 0 and 1 are equivalent. Since 10 in binary is equal to 2, we can know that A = 2, and equation holds. Since 11 in binary is equal to 3 which is G, the binary representation of-5 should be expressed in two's complement, which should be 1111 1011 (the original code is 1000 0101, the one's complement is 1111 1010, and the two's complement is 1111 1011). When the binary representation of-5 is folded in half and represented by symbols, it is GCGG. Then we can know that X =-5 has entered a cycle of-10 →-5 →-7→-20→-10.

References

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