Views: 17149 | Replies: 21

[Tutorial] [Arabian Nights] - Triple Blind [Five Cycles] Study [Copy Link]

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Posted on 2016-12-26 03:22:02 | View only this author | View in reverse order 1# Direct elevator access

精华

This post was last edited by Tianfangmo on 2016-12-26 03:21

Introduction——

I am not very talented. I have been studying triple-blind for more than six years, but my score is still not SUB40. It is mainly because I am too lazy and do not practice enough. I have stepped up my practice in the past month, and I have practiced more this month than in the previous six years. But except for the year of the college entrance examination, I have never given up triple-blind and I only focus on this project. I have spent so much time on the research of triple-blind, and I have calculated the 818 formula myself. Over the years, I have made some achievements in the research of triple-blind. From today on, I will update a series of posts named [Arabian Nights Talks] from time to time, and slowly share all the research results in recent years. The reason why it is called "Night Talks" is that I basically only have time to write posts at night now, and my thoughts are generally clearer at night. It is actually not bad to be "Arabian Nights Talks", because the things I share may not be very useful and are purely theoretical research.

I have forgotten when I started to study the Five Cycles. I first encountered the Five Cycles formula when I was promoting the 818 formula. Later, I became interested in the Five Cycles formula and began to focus on studying it. In the winter of 2014, I started to study the Five Cycles formula purposefully, but I have been doing it sporadically without any clues. But now I have given up the theoretical study of the Five Cycles. Now I share all my understanding of the Five Cycles, hoping to be of some help to those who are interested in the Five Cycles.

text--

First, we need to explain what the five-cycle formula is: as the name suggests, the five-cycle formula means that five blocks are involved in the cycle, which means that the return of the four blocks except the buffer block is solved at one time.

Theoretically, there are 22×20×18×16=126720 formulas for the five-cycle three-blind edge block, and 21×18×15×12=68040 formulas for the corner block. . . (You know why the OP gave up, right?) Of course, this is just a theoretical value, just like there is no need to memorize all 818 formulas in the step-by-step method, you can use them through the setup method, there will definitely be a solution for the five-cycle that everyone can accept.

The five-cycle formula that the OP understands is to modify the restrictions of the three-cycle formula to get the five-cycle formula. This restriction refers to the prerequisite for making the formula, such as the PLL formula of CFOP must limit the top surface hue to be restored, and the OLL formula must limit the

bottom and middle layers to be restored. The more restrictions there are, the longer the formula will be, just like the three-cycle formula of different layers in the three-cycle is simpler than the three-cycle formula of the same layer (of course, the concept of the same layer and different layers is also relative, so I won't explain it here). This can also explain why the five-cycle formula is generally simpler than the three-cycle formula (this will be explained in detail later). So to understand the five-cycle formula, you must understand the three-cycle formula. Don't think the OP is too long-winded. Here I will explain the three-cycle formula again, or more accurately, the three-cycle switch! This will lead to the principle of the five-cycle!

First, let me show you a post published by Big Cigarette Butt in 2005. The link is: http://bbs.mf8-china.com/forum.p ... hlight=%BF%D5%D1%A8

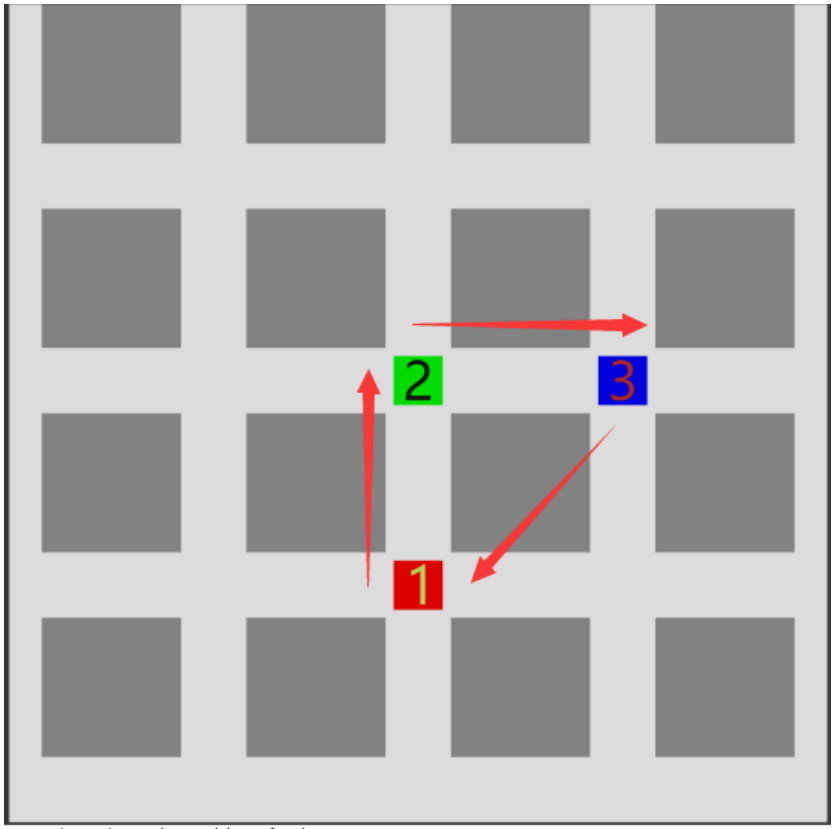
Here I would like to express my deep respect to the great master (fifth grade of elementary school in 2005) and borrow two concepts from the post...

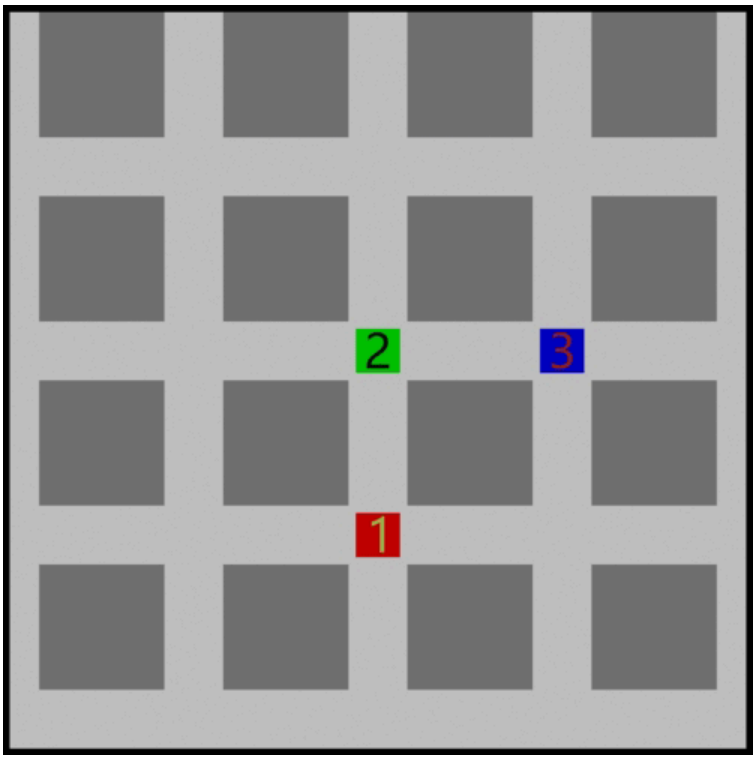
1. Group: Each rotation of the Rubik's Cube can be regarded as a group of two relative motions. For example, U, D, R, L, M, etc. can all be regarded as a rotation group.

2. **Hole** : If the formula A causes only one block in one of the transformation groups to change, the position of this block is called **a hole** .

The four steps of the hole method: ABA'B' is what we call a switch !

The following diagram will explain the principle of the switch. As shown in the left picture below, we need to solve the clockwise movement of the three blocks 1, 2, and 3. It is stipulated that they can only move on the white path and cannot cross the gray grid. Then the best solution is the four-step solution in the right picture below.

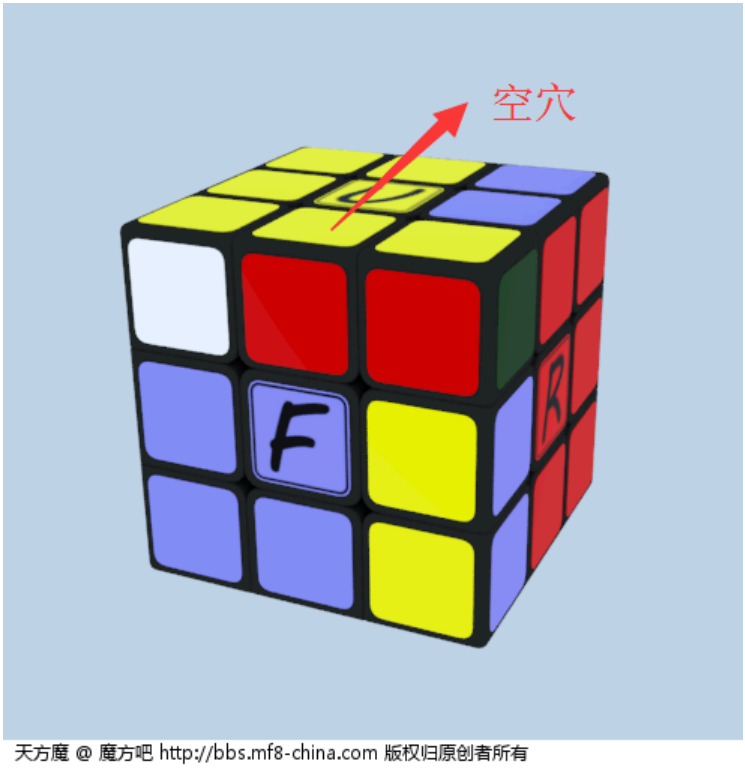




These four steps correspond to A: 1 to position 2, B: 3 to position 2, A': 2 to position 3 to position 1, B': 1 to position 2 to position 3. The most important thing about this solution is the original position of the number 2, and this position is a hole position in the three-cycle formula. Let's use a formula to explain it in detail...

Formula example: (RU'R'U)(M')(U'RUR')(M)

The four steps ABA'B' of this formula are these four brackets, formula A=RU'R'U, formula B=M', formula A'=U'RUR', formula B'=M. Then the hole position of this formula is easy to understand, which is the only UF position that has moved in the M-layer transformation group after completing formula A. The next formula B''s M' makes the DF block move to the hole position, and then the inverse formula A''s U'RUR' makes the edge block at the hole position move back to the original position. Finally, the M hole of formula B' returns to its original position.



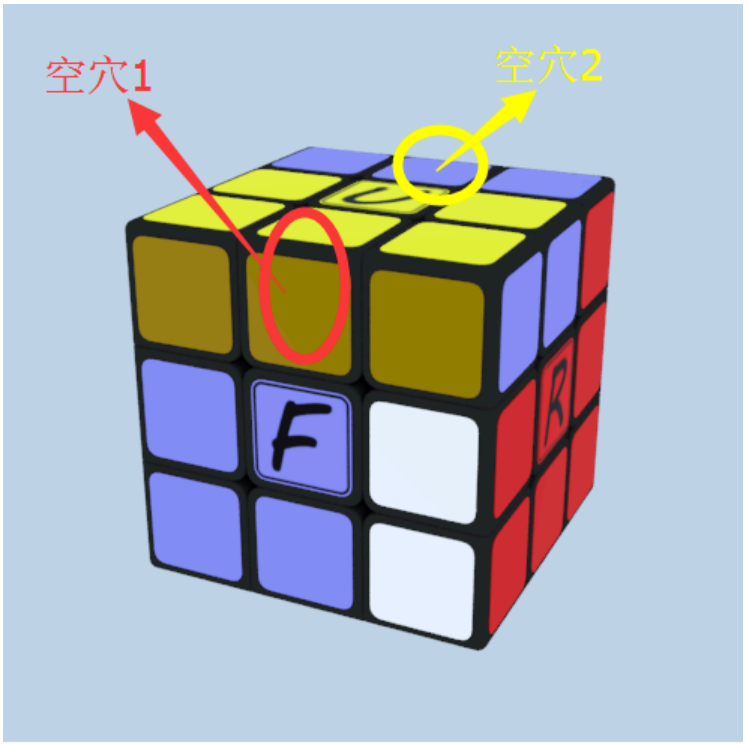
The above are all about the explanation of the three-cycle switch. The key point is the hole. In fact, we have already used the concept of the hole when we first started to learn the Rubik's Cube restoration seven-step layer-first method and the last step of the color flip using the six-time restoration RUR'U' formula.

Everyone thinks it is OK to use holes to understand the three cycles, right? In fact, it is seriously wrong!!!

Because we defined a hole, it is equivalent to adding a layer of restriction ! We limit the transformation group to have only one hole, so in order to make a hole, we have to do a series of rotations to put the other blocks of the transformation group back into place.

Let's look at the formula (RU'R'U)(M')(U'RUR')(M). We will find that the first step of the switch A (RU'R'U) only affects the edge block of the M-layer rotation group by the rotation of the U layer. We do RU' to move the position of two edge blocks of the M-layer rotation group. Doing R'U not only makes other blocks move to the empty position, but also returns another edge block of the M-layer rotation group. In other words, in order to make the M-layer rotation group only produce an empty group at the UF position, the four-step formula RU'R'U is performed.

If we modify the restriction that the transformation group has only one hole , then we only need to do the first two steps of RU' to generate two holes! ! Then we can follow the steps of ABA'B' to make the formula : (RU')(M')(UR')(M) and we get a five-cycle formula ! ! ! !

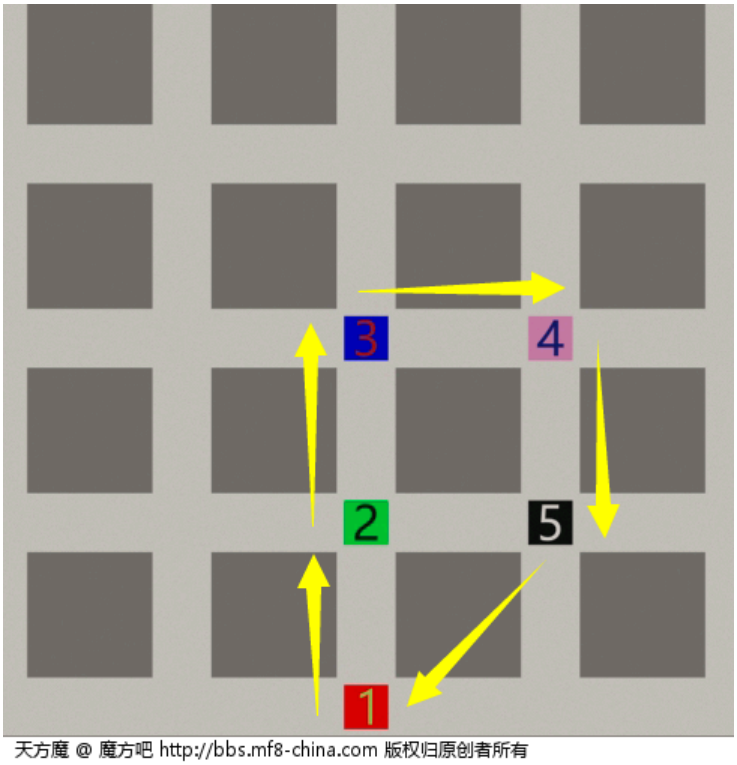


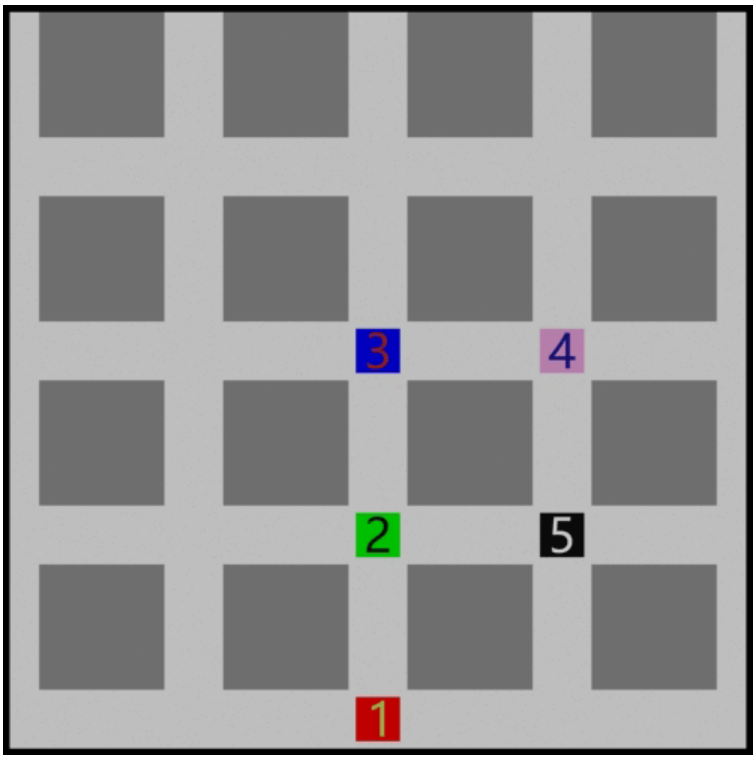
At this point, everyone will find that the principle of the five-cycle formula is also a switch, but it uses a switch with two holes.

I mentioned before that the five-cycle formula is simpler than the three-cycle formula because the restriction of only one hole is removed! This is better reflected in the CFOP formula. The restriction of CFOP should be: P＞O＞F＞C, so C with the least restriction is the easiest to do and does not require a formula. In fact, the two holes in the five-cycle formula is also a restriction. Restrictions are relative.

Although the restrictions are reduced compared to the one hole in the three-cycle formula, it is also a restriction in order to make two holes work! ! ! !

Like the three-loop switch, there is also a five-loop switch diagram with two holes.





{Note: This diagram was proposed by the netizen "DBPandabu" (the "Panda" in the "Home of Active Blind Solving Fans" group).}

Below are some five-cycle formulas that the author wrote down when he was studying the five-cycle formula. In fact, there are more formulas in the handwritten formula book.

【Tian Fang Mo】Five Cycles.zip (7.07 KB, Downloads: 106) (Note: The three-blind edge block encodings Q and R,

S and T, W and X, Y and Z are reversed. This is a matter of personal habit. The formula is for reference only!)

3 people have rated experienc reason Close

walk slowly	+ 20	Very awesome!
kexin_xiao	+ 20	Like it!
cube_master	+ 20	Very awesome!

Total score: Experience + 60 View all scores

Collection 5

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Tianfangmo

Posted on 2016-12-26 07:36:36 | View only this author 2#

This post was last edited by Tianfangmo on 2016-12-29 13:06

The two-hole switch produces a five-cycle formula, and there are other three-hole and four-hole situations... The three-hole switch produces a seven-cycle formula... The multi-hole state can no longer be called a hole, the entire switch group participates in the exchange, and it should be called an empty group... The diagram of the seven-cycle is similar to the three-cycle and five-cycle diagrams, just add two blocks. There must be a deeper level of research on switches . I will open another post to share my understanding of switches in the future!

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Easy to twist

Posted on 2016-12-26 08:33:13 from mobile phone | View only this author 3#

caoskow come to the top!

White Devil

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123wyx

Posted on 2016-12-26 18:42:14 | View only this author 4#

A very well-written article. Technical posts must be strongly supported!
I believe that blind tightening technology still has room for continuous improvement and progress. After unremitting efforts, there will definitely be new gains and insights.

Silver Devil

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123wyx

Posted on 2016-12-26 18:55:32 | View only this author 5#

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The other day, I discussed a lot of issues about the five-cycle in the QQ group with the original poster. I would like to add two more words:
Tian Fang Mo's accumulated five-cycle formulas are very good materials for studying the five-cycle pattern.
The study of the five-cycle can be started from different angles. The original poster's research is a very good idea.
On the other hand, if we understand the five-cycle from the perspective of "setup to basic formula", we can regard the UM'U'M transposition formula (see the original poster's "two-hole switch diagram") as a basic formula. By setting up to the state of this formula, we can get many five-cycle formulas. Most of the five-cycle formulas can be seen as this pattern.
In Tian Fang Mo's data, we can also see formulas of other patterns, such as (R2 U)x6, which is a very beautiful RU flow five-cycle formula.

I like the original poster's research.

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Posted on 2016-12-27 00:25:05 | View only this author 6#

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The ideal situation of 5 loops is that 3 formulas solve all edges. Then the 5 loop edge operation time of the two-step method does not exceed 3 seconds. But how to deal with this huge amount of formulas. Also, is there any application of 5 loops in corner blocks? Another question is that parity check will become difficult to judge, or prone to errors. If we regard 5 loops as the parent set of 3 loops, instead of considering 5 loops as a single exchange of 4 edge blocks, we should consider them as two groups. Wouldn't it be better to classify and summarize the formulas in groups? Consider them as two three loops participating at the same time, use two buffers, and summarize the formulas in groups? ?

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Tianfangmo

Posted on 2016-12-27 09:06:56 | View only this author 7#

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This post was last edited by Tianfangmo on 2016-12-27 09:11

> sjont posted on 2016-12-27 00:25
> The ideal situation for 5 loops is that 3 formulas solve all edges. Then the 5 loop edge operation time of the two-step method does not exceed 3 seconds. But how to solve this huge amount of formulas...

The application of the five-cycle formula is still under discussion. There will definitely be a solution that everyone can accept in the future. This requires the joint research of all the masters, which is why I wrote this post.
I think that the five-cycle should not be regarded as the main one in the three-blind, but as an auxiliary to the three-cycle. If it can be solved with the five-cycle, use it, and if it is not enough for the five-cycle, use the three-cycle. For example, there are five groups of codes in the edge block. Two five-cycles solve four groups. The remaining group can only be solved with three cycles. The same applies to odd and even. When the host uses the pinyin code to read the code now, he reads two groups together, that is, two pronunciations are paired into a five-cycle, but in the end there is only one pronunciation left, so he must use three cycles. (Although it is read in this way, the three-cycle formula is still used)
In addition, the idea you mentioned later is what the master Wang Yuxin is studying. He thinks from the perspective of practical application. My research is just a study of the principle, which is not very useful in practical application. Just like when we are pushing the 818 formula, optimizing the setup method to push the formula is always simpler and more convenient than using the switch to push the formula.

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yingmu

Posted on 2016-12-27 10:42:37 | View only this author 8#

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Great post, thumbs up!!!

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Posted on 2016-12-28 14:00:49 | View only this author 9#

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> Tian Fang Mo published on 2016-12-27 09:06
> The application of the five-cycle formula is still under discussion. There will definitely be a solution that everyone can accept in the future. This requires the joint research of all the gods, which is also...

I think this skill is very practical as a three-loop auxiliary, but it should be better if it is grouped and looped with double buffer positions. In this way, the SET UP route does not consider 4 blocks, but only two groups, which greatly reduces the amount of formulas and achieves the purpose of real practicality.

sion

Posted on 2016-12-28 14:54:23 | View only this author 10#

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> Tian Fang Mo published on 2016-12-27 09:06
> The application of the five-cycle formula is still under discussion. There will definitely be a solution that everyone can accept in the future. This requires the joint research of all the gods, which is also...

I personally think that grouping 5 loops is the most practical direction, which will make it easier to understand and remember. On the other hand, as I said, the ideal situation of 5 loops is that 3 formulas solve all edges, then the operation time will be greatly reduced. Calculated based on the operation time of 3-5 seconds, this is also a huge breakthrough. On the other hand, another good application direction of the 5-loop formula is small loops. There is a high probability that a 5-loop formula can be used to solve a small loop, and the demand for formulas is not large. Using the SETUP principle, only a few basic formulas may be needed to easily solve the small loop. In terms of memory volume and encoding, if it is a grouping method, it may be necessary to derive the encoding method, such as encoding according to the original encoding, and then grouping the secondary encoding, but it can reduce the memory volume. The original encoding is only to assist the secondary encoding, and the real restoration is to directly make the formula according to the secondary encoding. For most people, memory and encoding are the difficulties of blind twisting. After closing their eyes, most people can complete the formula at the speed of fast twisting. Then, based on the same memory volume and memory time, 5 loops can greatly improve the operation time. I am very optimistic about this research direction. . But I haven't practiced blind twisting for a long time. Studying the 5-cycle method requires a deep understanding of the original step-by-step method and a certain amount of formulas as a basis before I can continue. I'll just have to wait for the masters to continue my research.

发帖

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