I CAN MEET WITH DEAD SCIENTISTS

He only needs to spend 100 knowledge points to open any of the doors and complete the tasks inside.

However, there's a cooldown period between doors, they can't be opened consecutively without a gap.

As for the later part of the story, everyone knows it.

The first door leads to the 1665 dungeon.

The activation points for this dungeon were gifted by Halo, where Xu Yun met Little Niu and completed the novice task.

The second door is the 1100 dungeon.

Time of the Northern Song, Xu Yun caused a major event.

The third door is unknown and not yet ready to be opened.

Another thing worth mentioning.

Before opening the second door, Xu Yun gained 107 knowledge points through cockroach extermination live streaming.

At the time, the allocation of 107 knowledge points was: the 1665 dungeon received seven points, making it '10/100.'

The 1100 dungeon received 100 points, thereby unlocking that tale of the Northern Song.

Later, the Northern Song dungeon ended.

The second door turned into a Space-Time Album reward during clearing, floating above the Halo.

In other words.

When Xu Yun last returned to reality, the state in space was like this:

1665 dungeon knowledge points 7.

Position of the second door empty.

Third door pending opening, knowledge points '0/100.'

However, at this moment.

The position of the second door still remains empty, but the other two doors have undergone special changes.

Firstly, the third door.

The knowledge points on the door are no longer 0, but...

73.

"73, huh..."

Staring at the number on the third door, Xu Yun looked pensive:

"According to the initial judgment, knowledge points are related not only to my personal ability but also to the impact of events in the real world."

"Recently, my abilities have improved significantly, and 'one roach wiped out' caused major reactions in reality, so obtaining 73 knowledge points is reasonable..."

After the cockroach extermination live stream.

Xu Yun carefully researched the characteristics of knowledge points and confirmed one thing:

The acquisition of knowledge points, besides basic knowledge learning, is also related to the social influence of events.

The more people affected by an event, the more knowledge points are gained.

In the past days.

Xu Yun deduced the movement trajectory of a new type of Λ subatomic particle and gained some insights from Old Su's knowledge teaching, progressing in ability.

Plus, a Huadun Biotech had just been established, and during the sales process of 'one roach wiped out,' a defensive and offensive battle with external network hackers took place and trended on hot search, apparently meeting social event criteria.

Therefore, combining both.

73 knowledge points appearing is reasonable.

And this number indicates another scenario...

The next dungeon's opening won't be too long.

First dungeon met Little Niu, second dungeon met Old Su, who will emerge at the third door?

Einstein?

Dirac?

Or Zu Chongzhi?

Subsequently, Xu Yun temporarily set aside this idea and approached the first door to observe its changes.

The first door leads directly to Little Niu's 1665 dungeon, currently showing the knowledge points as '10/100.'

Back then, having only obtained 7 knowledge points for this door, Xu Yun made two guesses:

Namely attribute and overflow.

The former means the attribute of knowledge points for the two doors is different, not comparable in identical nature.

Just like currency denominations.

The knowledge points for the second opening of the 1665 dungeon belong to 'ten dollars,' whereas the second door is 'one dollar.'

Due to differing conversion bases, the discrepancies are thus absurdly large.

Regarding overflow conjecture, it indicates priority issues with no attribute relation.

That is, the extermination live stream provided a total of 107 points, first filling the yet unopened second door, with excess seven points overflowing back to the first door.

At this moment.

Knowledge points for the first door still haven't changed, but in its center, appears...

A letter.

Unlike knowledge points, Xu Yun judged with naked eyes, this letter seems removable?

Thinking of this.

He couldn't help but reach out, testing his reach towards the letter.

A moment later.

A sensation of kraft paper reached his hand.

Indeed.

This is a physical object.

Then Xu Yun used gentle force and picked the letter into his hand.

Looking at the letter before him, Xu Yun hesitated for a moment and decided to tear it open.

Inside the envelope was just a piece of letter paper, folded twice.

It appeared ordinary.

Subsequently, Xu Yun extracted the letter paper and unfolded it.

Soon.

A line of text appeared before him:

"Mr. Feiyu, personally opened..."

.....

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Xu Yun deduced the movement trajectory of a new type of Λ subatomic particle and gained some insights from Old Su's knowledge teaching, progressing in ability.

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That is, the extermination live stream provided a total of 107 points, first filling the yet unopened second door, with excess seven points overflowing back to the first door.

At this moment.

"Fat Fish?"

At the instant he saw this term.

Xu Yun's heart suddenly skipped a beat.

Although the term doesn't sound very pleasant, a bit silly even.

But across Xu Yun's social circle, there is only one person who would call him that.

And that is...

Isaac Newton, Little Niu.

But...

How did Little Niu's letter end up in his hands?

According to the previous hints from the Halo, wasn't the timeline within the dungeon supposed to be stagnant?

Thinking of this.

Xu Yun couldn't help but take a deep breath, braced himself, and continued reading.

"Mr. Feiyu, open personally:"

"Mr. Feiyu, it's been a full five years since you suddenly disappeared, Uncle William, aunt, and Lilani still miss you dearly."

"At that time, you left only a letter at the stall telling you met your family near the Grantham District, and then left without even paying for the meal."

"However, thanks to you, our tomato sauce sales have been excellent, and with the support of the district quickly occupied a large market."

"According to the original agreement, your living expenses were deducted, totaling Guinea... oh no, now it's called Pounds, sixty-seven in total..."

"Considering that this letter may not reach your hands smoothly, these gold coins are temporarily kept by me, with a storage fee of 0.0008 per day..."

Seeing this.

Xu Yun's eyelid twitched suddenly, and he slapped his forehead.

Good heavens.

You really are something, Mr. Niu, so I have to pay a storage fee to save my own money?

Moreover, a daily interest of 0.0008, even in 2022, could be considered usury.

At least learn from those kind-hearted readers who can defer updates without any interest.

But soon.

Xu Yun managed to calm his emotions.

He still hadn't figured out the method of letter dispatch, and nobody knew if he could receive those Pounds next time.

Plus, the sales of the current "One Insect Extinct" are quite good, Xu Yun is not as desperate for money.

Therefore, compared to those Pounds dividends, he actually cares more about other information left in his heart by Little Niu.

For example.....

The timeline of sending the letter.

According to the situation revealed in Little Niu's letter, the time of writing the letter should be five years after he disappeared.

This is clearly somewhat abnormal.

Because according to the previous hint from the Halo.

The timeline inside the 1665 dungeon should have been paused, continuing until his next return.

But now it seems...

Little Niu and the others seem to be able to 'move' again?

Thinking of this.

A new possibility suddenly emerged in Xu Yun's mind:

Could it be...

This is Little Niu in the simulated timeline?

This guess indeed explains the origin of the letter, but if so, what will his next entry into the 1665 dungeon be like?

If the two timelines influence each other, then the Halo undoubtedly is making a mockery of itself, this is a mistake the Halo should not make.

But if they are independent, what is the meaning of this letter?

Why did it appear at this point in time?

Even...

Could it have some unknown key link with Old Su burning money to mourn him?

"There's still too little information..."

Xu Yun gently shook his head, glanced at the letter in his hand again, and his gaze lingered a bit longer on Lilani's name.

Then he thought of something and his expression relaxed immediately:

"When I first met Lilani, she should have been only five or six years old, even if it's been five years, the girl is just around ten... at most twelve years old."

"Thankfully, thankfully, nothing's happened yet."

Lilani.

She was the mischievous kid in the 1665 dungeon who gave Xu Yun a lump of cow dung upon meeting, and during the simulation process, apart from Hook, the one who affected Xu Yun the most.

According to the Halo's simulation results.

This girl's personality turned increasingly introverted after he left, she dropped out at fifteen to work.

At nineteen, she went to the Netherlands to find him but unfortunately died in a shipwreck at sea.

Even calculating by the maximum age, Lilani is now only twelve at most, there are still a good few years until the tragedy at nineteen, still a lively little girl.

If Xu Yun can contact Little Niu, he completely has the chance to avoid the tragedy.

Thinking of this.

Xu Yun took up the letter again and continued reading.

Just as the letter stated:

"...After you left, the plague gradually dissipated, and the school reopened four years ago, I returned to the University of Cambridge."

"I am now the new Professor Lucas at Trinity College, Cambridge University, along with the dividends earned from tomato sauce, I've completely freed myself from that woman's control, achieving economic independence."

"Over the years, relying on the Han Li expansion and Yang Hui's Triangle model, I've built a new set of mathematical tools."

"And have made considerable achievements in theory, the specific formulas are as follows....."

Looking at the flamboyant handwriting on the envelope, Xu Yun could imagine roughly how Little Niu looked when writing these words.

Without accident.

This part should be Little Niu introducing his recent situation, the mathematical tools he mentioned are naturally calculus.

According to the Halo's previous simulations.

Little Niu deduced Han Li (Taylor) expansion's third-order formula in April 1666, laying a solid foundation for calculus.

The time of Little Niu writing the letter should be between 1671-1672, the calculus model must have been completely established.

Then he glanced at the additional formulas provided by Little Niu:

[If $f'(x_0)$ exists, around x_0 there is $f(x_0+\Delta x)-f(x_0) \approx f'(x_0)\Delta x$.]

[Since $\Delta x=x-x_0$, we can derive $f(x)=f(x_0)+f'(x_0)(x-x_0)+o(x-x_0)$.]

[Approximately, we have $f(x) \approx f(x_0)+f'(x_0)(x-x_0)$.]

This is a very basic differentiation formula, not much different from what Little Niu established historically.

However, while pondering,

Xu Yun suddenly paused, with his expression gradually becoming serious:

"But during the derivation process, I suddenly discovered a problem."

"That is, concepts like 'infinitesimals', 'infinitely close to', dx, seem very vague, sometimes being zero and sometimes not, inevitably causing confusion."

"So, I spent another two and a half years and finally derived a more rigorous mathematical concept."

"If and only if for any ε, there exists a δ so that as |x-a| approaches δ, |f(x)-L| is less than ε."

"Then we say the limit of f(x) at point a is L, denoted as: $\lim_{x \to a} f(x) = L$."

"In my view, this definition truly achieves complete 'staticity', without any trace of motion, and leaves nothing unclear."

"Fat Fish, with your intellect, it should not be difficult to see that it doesn't care how you approach L, whether you fly or twist around."

"As long as the final difference is smaller than ε, I acknowledge l as the limit at a."

"For example, consider the simplest f(x)=1/x; as x grows larger, the value of the function becomes smaller: f(1)=1, f(10)=0.1, f(100)=0.01, f(1000)=0.001..."

"...Clearly, as x increases, the value of f(x) approaches 0. Therefore, the limit of f(x) at infinity should be 0."

"Next, take an arbitrarily small ε, say ε=0.1; then find a δ to see if there's a range such that |f(x)-0| is less than 0.1."

"Clearly, x just needs to be greater than 10; for ε=0.01, just make x greater than 100."

"Given any ε, we can obviously find a number that when x is greater than this number, |f(x)-0| is less than ε, and then it's alright."

"What do you think, isn't my idea quite brilliant?"

Several minutes later.

Xu Yun looked up from the letter with admiration.

Although the phrase is cliché,

at this moment, he really wanted to gasp in astonishment at how terrifyingly talented this person is...

As is well known,

the rudiments of calculus can be traced back to a long time ago, with many enlightened minds from different eras proposing related concepts.

For example, Archimedes, Aristotle, Liu Hui, among others.

Building on the work of these pioneers,

in the mid-to-late 17th century, Newton and Leibniz each independently established a systematic calculus.

However, those who truly understand the context know that the calculus created by Newton and Leibniz was not perfect.

Just like Little Niu said, it had a fatal flaw:

The concept of limits was too vague.

Therefore, many tried to patch this flaw, like Maclaurin who tried to explain it with instantaneous velocity, and Taylor with differences.

But from the perspective of later generations, their approaches were clearly not right.

Hence, during this phase,

there were many critiques and doubts about calculus theory.

The most representative was Bishop Berkeley, marking the first mathematical crisis proposed earlier.

To resolve the crisis, what was needed?

The answer is simple: only by making the concept of limits truly rigorous.

Later, through the efforts of D'Alembert, Bolzano, Abel, and Cauchy, they finally defined definite integrals as a sum limit.

Finally, with Weierstrass, a great mathematician, adding the final piece, the now commonly used logically rigorous ε-δ definition of function limits was achieved.

Note that Weierstrass achieved this at the end of the 20th century, two hundred years after Little Niu and his peers created calculus!

Yet in this letter, Little Niu, relying on his own strength, has deduced the concept of limits to its ultimate form!

Indeed,

at that time, Little Niu had Yang Hui's Triangle and Taylor's Formula to assist him, which were entirely different from the historical Little Niu.

But both served only as auxiliary aids, at most helping with the initial steps.

The decisive factor was Little Niu's personal capability.

Looking at the letter in front of him, a thought suddenly surged in Xu Yun's heart:

If Little Niu could come to the modern world like Old Su, how high would his achievements be?

But soon,

Xu Yun shook his head and dismissed the thought.

Old Su's coming to the modern world was very fortuitous and closely related to the historical context.

Achieving the same level in the 1665 Dungeon is extremely challenging.

Although the image of Old Su and Little Niu taking off together... ah no, both excelling in the modern world is beautiful, it's unlikely to happen anytime soon.

Further,

The Halo bringing this letter to me evidently isn't just for Little Niu to report his achievements; there must be other purposes.

Perhaps it's a task, perhaps something else.

With this thought,

Xu Yun lowered his head and read the letter again.

"...The above are my mathematical discoveries; if you are not well-versed in calculus, it might provide you some inspiration."

"But this time, I'm writing to you not to boast about my achievements, but rather to swallow that money (strikethrough)... but there's something I need your help with."

Seeing this sentence.

Xu Yun immediately became interested and read on seriously.

"During the previous research on gravity, I summarized and optimized some of Galileo's ideas."

"Some were solved smoothly, but others encountered problems, to put it bluntly, very serious problems."

"Fat Fish, you should know, Galileo believed that there is no absolute reference frame in the world, only relative ones."

"Therefore, it is impossible to measure the velocity of this system through experiments within an inertial system."

"But in my view, time and space are two independent concepts, having no connection with each other, each possessing absoluteness."

"I believe space is absolute, by its nature, it remains independent and unaffected by external objects, always the same and immobile."

"To validate this hypothesis, I conducted a wood bucket experiment; the specific illustration is as follows..."

"Logically, this experiment seems fine, but later I further researched the dispersion phenomenon you first experienced."

"Well, how should I put it? I discovered the nature of light... seems to be far more complex than I originally imagined..."

"Fat Fish, I remember you said you were an assistant at the Netherlands Leiden University College of Natural Sciences; thus, I wrote this letter with intense doubt and anticipation."

"If you receive this letter and can solve my doubts, please reply to me as soon as possible..."

The letter ends here.

At the bottom right corner is a name:

Isaac Newton.

.....

After setting down the letter.

Xu Yun gently rubbed his nose, his chest rising and falling a few times, exhaling a heavy breath.

In the 21st century.

Some marketing accounts often hang this statement on their lips:

"Newton's theory is wrong, and it was overturned by Einstein long ago!"

Some videos explain this with vivid detail, and due to physics being a distinctly barriered discipline, some people don't fully understand the intricacies and believe it in a muddled manner.

So what is the actual situation?

The truth is this:

Newton proposed many theories in his lifetime; among them, one was half right, one entirely wrong.

The remaining theories and their system are alive and well, genuinely forming the cornerstone of our macroscopic world.

Let's talk about the half-right theory first.

This theory is the light particle theory that Little Niu insisted upon.

At the time, Little Niu gathered a lot of evidence through his research to support the particle theory of light, thus promoting it, becoming the representative figure of the particle theory in that era.

This matter truly has nothing much to say; before 1909, no one knew about the wave-particle duality of light.

After all, back then, no one would have imagined such an oddity in light, possessing the dual character of behavior that was beyond the syllabus.

Just like someone whose gender can't be determined entered the male restroom and audibly tinkled in front of other males, then went to the female restroom and did the same audibly.

Thus, the males said this person is male, the females said this person is female, both parties believed what they saw with their own eyes could not be wrong.

So what was the outcome?

Eventually, the school had a hospital conduct an examination, discovering the person's gender was Hideyoshi, where do you go for redress now?

Thus, Little Niu's speculation on the particle theory can only be considered a limitation of the times, many Bosses overturned their positions later on.

As for the completely wrong theory...

It is the absolute space-time view proposed by Little Niu.

Little Niu put forward this idea in "Mathematical Principles of Natural Philosophy," wherein he depicted an absolute space-time view:

Velocity is a function of time, space and time are mutually independent, existing as uninterrupted time flow and spatial expansion.

In other words.

He believed that time and space exist independently, separated from the movement of bodies.

For this, he conducted the experiment, which was also mentioned in the letter, the wood bucket experiment.

This experiment is actually quite simple; even Xian Weiren can easily complete it:

Firstly.

Use a long, soft hanging rope to lift a bucket of water, twisting the rope into a braided pattern.

If you hold the hanging rope, keeping the braided rope from unraveling, then the bucket and the water within are relatively static; the water surface is flat.

But suddenly releasing it, the braid begins to relax.

The hanging rope begins to rotate, and the bucket rotates with the rope.

At first, the water in the bucket doesn't rotate, only the bucket rotates, the bucket and water rotate relatively.

But slowly.

The water is taken by the bucket and begins to rotate.

Finally, both the water and bucket rotate alike.

At this point, the water and bucket are relatively static, not rotating.

Yet the water's surface presents a concave shape, lower at the center, higher at the edges of the bucket.

To be sure.

The operation is simple, but the thought is quite ingenious:

Firstly... or call it thought 1, we can calculate the angular velocity Ω of the water's rotation from the shape of the water's surface.

Thought 2, we observed an objective experimental phenomenon:

At the start.

The relative motion of the water in the bucket is maximal, yet it shows no tendency to leave the rotation axis.

The water neither shifts to the edge nor rises, but maintains a plane, so its circular motion hasn't truly begun.

From point 2, we derive three things:

3. This reference frame is not the bucket.

4. This reference frame is not the water itself.

5. Within this system, there are only the water, the bucket, and space.

From 3, 4, and 5, a final conclusion can be drawn:

6. This reference frame can only be relative to space itself, thus this objectively existing space is absolute space.

According to the original trajectory.

Little Niu had no doubts about the results of this experiment and thus proposed the concept of absolute spacetime, which became the biggest stain for later critics attacking him.

Everyone should know what happened afterward.

Einstein proposed the theory of relativity, suggesting that spacetime is one entity, and the two are inseparable.

In Einstein's spacetime view.

All things move in spacetime at the same speed, which is light speed.

Move faster in space, slower in time; the total speed always remains at light speed.

The structure of spacetime is a gravitational field, inseparable from each other and also inseparable from the material field,

Space tells matter how to move, matter tells space how to curve.

If compared from a mathematical perspective, Newton's spacetime view is undoubtedly R^3xR.

Which is a flat three-dimensional Euclidean space combined with a one-dimensional time unrelated to it, a very simple structure.

Einstein's spacetime is M^4, four-dimensional curved Riemann space including three-dimensional space and one-dimensional time.

You can imagine it as a four-dimensional curved "surface", binding time and space together; its metric tensor is the gravitational potential.

It's simple, right?

Then Xu Yun thought for a moment.

Instinctively, he planned to take out paper and pen from the backpack beside him.

But soon he laughed at himself—in this space, where would paper and pen come from?

Just as he was preparing to return to reality, suddenly in front of him appeared...

A ballpoint pen and a sheet of paper.

"..."

Xu Yun took the paper and pen, glanced around space a few times, and shouted:

"Boss, how about a table and chair too?"

After a moment.

Whoosh—

A table and chair appeared in front of Xu Yun, with a large sticker of Jia Ran prominently pasted on the front right of the table.

Xu Yun: "..."

This space indeed has issues, doesn't it?

Then he shook his head, forcing himself to eliminate distracting thoughts.

Sitting in the chair, he started to write a reply to Little Niu:

"Dear Mr. Newton,"

"Mr. Newton, long time no see, I am Fat Fish."

"If you still have the drafts I originally wrote to you, you should be able to confirm my identity through handwriting comparison."

"I am very pleased to receive your letter after several years, but I want to first explain to you that in recent years, I have suffered from severe asthma, arranged by my family to vacation in a remote place, and only recently gradually recovered."

"I am currently traveling in Europe, if you need to contact me, you can send letters to the original address.

"My assistant will forward the letters to me, but due to travel issues, my response time may be delayed."

"As for Guinea's dividends, I will leave them with you for now."

After writing this.

Xu Yun paused, reviewed the content once again.

Once ensured all casual matters were addressed, he continued writing:

"The mathematical tools you invented are truly admirable, a height I am far from reaching independently, please allow me to extend my utmost respect to you."

"However, as for the barrel experiment you mentioned, I have another view."

"I can roughly understand your thought process, at first glance it also seems quite ingenious, with six increasing ideas altogether."

"But have you thought about... making a mistake in your thought process on the fifth step?"

Indeed.

In the six derivations created by Little Niu, a fatal flaw appears in the fifth step.

In the fifth step.

Little Niu viewed water, the barrel, and space as one system.

But in reality.

The correct combination of this system should be water, the barrel, and all other matter in the universe.

The inertia of water is the result of interaction among water, the barrel, and all other matter in the universe.

In other words.

The angular velocity Ω of this body of water rotates relative to all other matter in the universe outside the water.

Then Xu Yun paused briefly and attached his rebuttal thought process to the letter as well:

"Let's assume, this universe only contains this barrel of water and this barrel."

"Then the phenomenon of your experiment would become like this: initially, the relative motion of water in the barrel is maximum, the surface immediately becomes concave."

"As the relative motion between water and barrel decreases, the surface gradually becomes flat. The angular velocity calculated at the beginning of the experiment is the speed of the body of water relative to the barrel."

"In other words, your so-called absolute space in the absence of other matter in the universe is actually the barrel's reference frame."

"Next, let's assume we are still in our universe, but the mass of our barrel is rooted... somewhat small, about Earth-sized."

"Then as the barrel starts to rotate, the water surface will also immediately start to change."

"Then the central mass's spin angular momentum and the circumferential mass's orbital angular momentum would conform to a certain function, namely the total rotational inertia of all matter in the universe equals zero."

Friends who have undertaken graduate-level physics should know.

Xu Yun's explanation thought process is very friendly to beginners and is intrinsic reference point theory.

That is, setting the reference frame in the target area's boundary effect region, all entities within the region relatively stationary to this reference frame are defined as this region's intrinsic reference point.

The intrinsic reference point as a whole has common motion, and the accelerations produced by various external forces are also identical.

So the relative positions of the intrinsic reference points remain unchanged.

Assuming an intrinsic reference point spontaneously generates a static object from nothing, analyzing its force and motion conditions, keeping it always stationary.

Then the force it experiences and the acceleration correspond to a balanced cancellation.

As for the second example mentioned by Xu Yun, it's actually an astronomical concept known as the "drag effect," which belongs to the frontier theory of spacetime curvature.

Indeed, in later generations.

It was a super-long experiment lasting 48 years that delivered the final blow to Little Niu's bucket theory.

This experiment was called Gravity Probe B.

Its core purpose was to precisely measure the geodetic drift and inertial frame dragging near the Earth to quantitatively test the General Theory of Relativity.

Its main device was a highly precise gyroscope placed on a satellite, with the satellite's orbit being circular and passing through the Earth's north and south poles.

At an altitude of 642 kilometers, it measured the rotation of the gyroscope axis relative to the background of the starry sky.

According to the General Theory of Relativity calculations.

The geodetic drift and inertial frame dragging on this satellite gyroscope axis were calculated to be 1.8 milli-arcseconds per year and 0.1 milli-arcseconds per year, respectively.

Gravity Probe B was hosted by Professor Everitt from Stanford University, starting in 1963 and ending in 2011.

The first 45 years were supported by NASA, and it was also NASA's longest-supported project, costing a total of 750 million US Dollars.

In the last three years, funds were raised by a Saudi prince with a PhD degree from Stanford University, costing over 30 million US Dollars.

What?

You ask why 750 million was spent in the early 45 years, but only 30 million in the recent three years?

Don't ask, the answer is inflation.

Of course.

Although there was a lot of profit in this project, the actual funds invested were still a very large amount.

However, despite the enormous time and financial expenditure of Gravity Probe B, the results were not ideal.

According to the initial declared goals.

Gravity Probe B was supposed to provide geodetic drift data with a precision of 0.01% and inertial frame dragging data with a precision of 1%.

Yet the final results had accuracies of only 0.28% and 19%, more than 20 times below the expected precision.

On the other hand.

Although the precision variances were large, it still successfully used the gyroscope to straightforwardly falsify the conclusion that "once a gyroscope's axis points in a certain direction in the background starry sky without any external interference, it always maintains that direction."

Thus thoroughly denying Little Niu's concept of absolute spacetime in reality—combined with theoretical arguments, this was considered a conclusive closing argument.

Incidentally.

In the early 1980s, Everitt once came to Huaxia, hoping to recruit a well-known Huaxia gyroscope expert from the Seventh Machine Department.

But this request was ultimately rejected by us, due to concerns about those experts not being able to return.

The expert Everitt had his eyes on was named Gao Bolong, a pioneer who had made stunning achievements in Huaxia's fighter aircraft industry, a true merit.

Three years before Elder Gao passed away, he was interviewed by Southern Weekend.

During the interview, he said something quite poignant:

"They (across the sea) offered fifty times the annual salary, settled in US Dollars, and at that time we were so short of foreign exchange it was almost like selling blood, the foreign exchange reserves in 1980 were negative 1.3 billion—yeah, negative."

"So I discussed with the minister, I said, Minister, if I go across the sea, I'm not likely to come back in this lifetime, trading me for such a large sum of foreign exchange seems quite worthwhile, I have this awareness, maybe headquarters should consider this?"

"The minister scolded me harshly on the spot, saying don't even think about it, talents like you can greatly help the country in the future, letting you go for some foreign exchange would be a crime!"

"So I stayed in the country, not failing the country's expectations, and I could give an explanation when I saw the minister."

How lamentable, how admirable.

Back to the topic.

Actually, according to the normal trajectory.

Little Niu adhered to his absolute spacetime concept until his death; theoretically, such doubts should not have arisen.

So clearly.

Little Niu's firm concept must have been shattered by certain circumstances, causing him some unresolvable unease.

Upon thinking about it.

Xu Yun couldn't help but focus his gaze on the end of Little Niu's letter, lingering on the sentence about the dispersion phenomenon for a few moments.

As is well known.

The interaction between matter is achieved through fields, so it is simply referred to as field action.

The field velocity is the speed at which the field propagates, and it is generally believed that the speed of light is the same as the field velocity, with light being the electromagnetic field in propagation.

In other words.

In Little Niu's concept of absolute space-time, the properties of light are particles.

And judging from the end of Little Niu's letter...

He seemed to have observed some anomalies in the properties of light through the study of dispersion phenomena?

"This should be the most likely scenario...."

In the space.

Xu Yun, while touching his chin, slightly furrowed his brows:

"It's just that Little Niu didn't mention in the letter the anomalies he discovered in the dispersion phenomenon. If he had conducted the double-slit

interference experiment, let's not mention the difficulty of performing this experiment in the 17th century, but his tone could definitely not be that hesitant....."

Upon this thought.

Xu Yun hesitated for a moment, contemplating certain matters in his mind.

Finally, he picked up a pen and paper, writing down the last sentence in the letter:

"Mr. Newton, although I'm not sure of your doubts, have you ever considered...."

"The properties of light..."

"Could possibly coexist in two situations?"

"Then the bucket starts to rotate, and the water surface will immediately begin to change." "Then the central mass's spin angular momentum and the surrounding mass's orbital angular momentum will conform to a certain function, which means the sum of all rotational inertias of matter in the universe equals zero." Friends who have studied graduate-level physics should know. Xu Yun's explanation is based on the intrinsic reference point theory, which is very friendly to beginners. This means setting the reference frame within the target region's boundary as the intrinsic reference point of this region, where each space within is stationary relative to this reference frame. The intrinsic reference point, as a whole, shares a common motion, and the acceleration caused by various external forces is equivalent. Therefore, the positional relationship of intrinsic reference points remains unchanged. Suppose the intrinsic reference point spontaneously generates a static point and analyzes its force and motion conditions to keep it stationary. Then its force and acceleration balance and cancel each other. As for the second example Xu Yun mentioned, it's actually an astronomical concept called "dragging effect," belonging to the cutting-edge theory of spacetime curvature. Actually, in later generations. The final blow to Little Niu's bucket theory came from an extremely long experiment lasting 48 years called Gravity Probe B. Its core purpose was to precisely measure geodetic drift and inertial frame dragging near Earth to quantitatively test the General Theory of Relativity. The main apparatus was an extremely precise gyroscope placed on a satellite with a circular orbit passing over Earth's poles. Orbiting at an altitude of 642 kilometers, it measured the rotation of the gyroscope axis concerning the background of the starry sky. According to calculations from the General Theory of Relativity. The geodetic drift and inertial frame dragging effects on the satellite's gyroscope axis are respectively 1.8 thousandths of a degree per

year and 1.1 ten-thousandths of a degree per year. Gravity Probe B was led by Professor Everitt of Stanford University, running from 1963 to 2011. The first 45 years were funded by NASA, marking it as NASA's longest-supported project, costing a total of 750 million US Dollars. In the recent three years, it was funded by a Saudi Prince who earned his PhD degree at Stanford University, costing over 30 million US Dollars. What? You ask why the early 45 years cost 750 million, and the recent three years cost only 30 million? Don't ask; if you do, the answer is inflation. Certainly. Despite the gravy inherent in this plan, the final capital implemented is still a very large figure. However, despite the tremendous time and financial expenditure by Gravity Probe B, its results were less than ideal. According to the original claimed goals. Gravity Probe B could provide geodetic drift data with accuracy reaching 0.01%, and inertial frame dragging data with accuracy reaching 1%. Yet, the final result's accuracy was only 0.28% and 19%, both more than twenty times less precise than expected. But on the other hand. Although the accuracy differences were significant, it still successfully debunked the conclusion of "Once an axis of a gyroscope with no external interference points in a certain direction of the background starry sky, it will always maintain this direction" in a straightforward manner with its gyroscope. Thus, Little Niu's absolute spacetime view was completely negated in reality—combined with theoretical arguments, this count as a definitive conclusion. Incidentally. Reaching a 1% accuracy in inertial frame dragging data. But the final result's accuracy was only 0.28% and 19%, more than twenty times less precise than expected. But on the other hand. Although the accuracy differences were significant, it still successfully debunked the conclusion that "Once an axis of a gyroscope with no external interference points in a certain direction of the background starry sky, it will always maintain this direction" in a straightforward manner with its gyroscope. Thus, combining theoretical arguments, this counts as a definitive conclusion. Incidentally.

"...The above are my views and suggestions."

"Sender, Li Feiyu."

After finishing this letter.

Xu Yun let out a gentle sigh and placed the pen aside.

Although it was still unclear why and through what channel this letter reached him.

But based on the situation previously mentioned by Little Niu in the letter.

Perhaps...

This is some sort of activation method for outside assistance?

That is, when Little Niu encounters a problem he finds difficult to solve, there is a certain possibility that he can contact me, engaging in cross-dungeon correspondence.

It's just unclear whether this method has a fixed cycle, more crucially, it's uncertain...

Whether there is any reward?

After all, according to Halo's previous performance.

Although it can be somewhat stingy, it has always adhered to the basic principle of "no pain, no gain."

Xu Yun then turned his attention back to the letter, starting the final proofread.

The purpose for Little Niu writing this letter was actually very clear:

The core issue was that for some unknown reasons, he had developed some doubts about the particle theory of light.

Maybe it was some phenomenon suggested by an outsider.

Maybe it was some clues that Little Niu discovered himself.

In any case, the impact on Little Niu was considerable.

Therefore, in this reply.

After much deliberation, Xu Yun finally chose to mention the wave-particle duality of light.

In the previous life, all friends who read textbooks would know.

The so-called wave-particle duality of light is actually very simple in textbook terms:

Light is both a wave and a particle.

In future generations, as long as you have received compulsory education, you would have come across this term.

But historically.

The exploration of the nature of light was actually a very tortuous affair.

Before Little Niu.

The wave theory of light actually had a lot of currency.

This theory was put forward by Huygens, and its number one fan was Hook, who was previously mentioned and greatly mistreated.

Hook supported the wave theory of light because he discovered the phenomenon of light interference, which is the colorful soap bubbles we usually see.

These beautiful bubbles are actually thin-film interference of light, and interference is undoubtedly a characteristic of waves.

So naturally, Old Hu believed that light is a wave.

Later, Little Niu ventured into new territory, proposing the particle theory.

And with the growing prestige of the Duke, scientists formed the view of "two whatevers":

Whatever the Duke supported was right, whatever the Duke opposed was wrong.

Thus, the particle theory thrived while the wave theory declined.

Then came a person named Thomas Young who conducted an initial interference experiment.

This experiment has now entered middle school textbooks; its ingenious design is a classic in physics:

Place a piece of paper with a pinhole in front of a lit candle, obtaining a point light source.

Place another piece of paper with two narrow slits in front of the point light source.

Then on the screen behind this paper, you would see alternating light and dark fringes.

By adjusting the distances between the paper and the screen, and between the double slits, you could change the spacing of the interference fringes.

The importance of this experiment ranks among the top in the history of science, so much so that when confirming electron wave properties later, scientists directly adopted the same experimental principle.

Thus, the double-slit interference experiment holds two spots among the ten classic physics experiments.

By 1808.

Marius discovered the phenomenon of light polarization.

Later, with the discovery of Poisson's spot, the wave theory of light saw a resurgence, achieving complete victory.

Then came Faraday and Maxwell. In classical physics—that is, the world visible to our naked eyes—the definition of light basically stopped here.

After another 80 years, Hertz discovered electromagnetic waves.

The photoelectric effect.

This key dividing line between the macro and micro world in human history was discovered for the first time.

During research on photoelectric effect, Thomson discovered the electron through the study of cathode rays.

At that time, Thomson exclaimed as if he saw something extremely surprising, that there existed such small things in the world!

Thus advancing human research into another micro world.

The subsequent developments became quite straightforward.

In 1900.

Planck proposed the quantum hypothesis.

In 1902.

Lenard summarized the photoelectric effect.

In 1905.

Lao Ai, Einstein entered the stage, summarizing the wave-particle duality of light.

After Lao Ai came Lai Debro, who proposed the hypothesis of matter waves.

He pointed out that not only photons possess wave-particle duality, but all microscopic particles do.

In 1927.

American physicist Davidson, a year after de Broglie's paper was published, completed the electron diffraction experiment.

Proving that electrons have wave properties, wave-particle duality as a basic characteristic of matter was confirmed, de Broglie's idea was vindicated.

Since then up to now, front-end physics has been primarily researching the truth behind the phenomena observed by these sages.

Meanwhile.

The entire debate over the nature of light lasted for hundreds of years, requiring a large accumulation of accomplishments.

Therefore, Xu Yun had no worry that his hints to Little Niu would steal Einstein's thunder, because in physics, proposing a concept doesn't equate to the truth.

Just like Little Niu's accomplishments in the field of universal gravitation.

Before Little Niu, many had already discovered 'gravity' or 'gravitational' phenomena, such as the famous official Ximen Qing.

But discovering a phenomenon means nothing, further argumentation and calculations are the tough parts.

The reason Little Niu could become the discoverer of the Law of Universal Gravitation is that he derived the relevant formulas and defined and generalized the phenomenon mathematically.

Therefore, if Little Niu could also happen to discover the electron and summarize the photoelectric effect, Einstein indeed would not need to worry about Little Niu handling his own field as well.

Moreover, with Einstein's wisdom,

if Little Niu could solve certain problems in advance, his achievements might reach even greater heights.

Then Xu Yun folded the letter and tucked it into the envelope.

Contemplating how to send it out, he saw the letter slowly transformed into a beam of light particles and dissipated through the first door.

Xu Yun: "...."

.....

Meanwhile.

1672.

Great Britain.

University of Cambridge, Trinity College.

"Hello, Professor Newton!"

"Professor Newton, have you eaten?"

"Professor Newton, I just bought a very pretty swimsuit..."

"Professor Newton, my boyfriend wants to invite you for fencing this weekend!"

After solemnly dealing with various students,

Newton, wearing his Anta sneakers and carrying a bag of bread, headed to the office belonging to Professor Lucas.

Compared to the time when he parted with Xu Yun,

Little Niu's expression, though still aloof, was considerably calmer, and his gaze wasn't as gloomy as it used to be.

After all, in this timeline, Little Niu hadn't been struck by Hook, and his dignity hadn't been trampled on.

On the contrary,

with Xu Yun's help, he had given Hook quite a few metaphorical stabs in the heart.

Six years ago,

after the first batch of ketchup was sold outside the Grantham District, Xu Yun suddenly disappeared without a word.

Although Little Niu and the William family were somewhat surprised, over time, they gradually accepted this reality.

Two years later,

as the plague gradually subsided, London also gradually returned to normal.

Little Niu then carried a significant amount of ketchup dividend to bid farewell to the William family and returned to London, back to the University of Cambridge.

At the same time, with the recommendation of his teacher Isaac Barrow,

he eventually became the youngest Professor Lucas in the history of the University of Cambridge with a 'First Honours Degree'.

In the following four years,

Little Niu successively derived a large number of mathematical and physical results and selectively published a small part of them.

Even though the published content constituted only a trivial fraction of the whole, it still made him the youngest academician of the Royal Society.

However, in recent days, due to a certain special coincidence,

Little Niu suddenly encountered some special problems.

This problem brought Little Niu great distress, causing quite a few of his hairs to turn gray.

In the end, with no other choice,

Little Niu suddenly thought of the Fat Fish he met earlier.

Their first meeting was warm, with Fat Fish having been temporarily fainted by the power of knowledge, while Little Niu kindly took him home.

After Xu Yun woke up,

he mentioned that he was from Leiden College of Netherlands University, and was an assistant teacher at the School of Life Sciences.

So theoretically, after Fat Fish disappeared, he should have returned to the Netherlands.

However, over the years, Little Niu had sent a few letters to Leiden College, but all ended with no response at all.

"I suppose it will be the same this time."

Thinking of this,

Little Niu couldn't help but shake his head and continued towards the office.

Just as he approached the office door, his thick eyebrows raised.

At that moment,

exposed from the gap at the bottom of the office wooden door, was a small portion of a letter's tail!

Although he didn't know who had sent this letter, upon seeing it, an idea suddenly flashed in Little Niu's mind:

Perhaps...

This letter is related to Xu Yun!

Thinking of this,

he hurriedly rushed to the door, took out his keys, opened the door, and picked up the letter.

Sure enough,

on the sender's column on the cover of the letter, were the English letters 'lifeiyu'.

But what was the meaning of the little girl's photo with chestnut-colored hair and pink clothes beside it?

With this doubt,

Little Niu gently closed the door and walked into the office.

After sitting down,

Little Niu couldn't even spare the time for a drink before impatiently tearing open the envelope like a groom on his wedding night.

Just like the letter he sent, Xu Yun's reply was also a very concise sheet of folded paper.

"Dear Mr. Newton,

Mr. Newton, long time no see, I am Fat Fish..."

Little Niu carefully read Xu Yun's introduction, then thoughtfully nodded:

"So this guy went to recover, no wonder he couldn't be contacted."

"But now having received a letter is not a bad thing, at least Lilani can get an explanation."

In the years after Xu Yun's disappearance,

Little Niu and William Asku were somewhat reluctant regarding Xu Yun's abrupt departure but quickly adjusted to it.

Only Lilani, who originally was a mischievous child, underwent a major personality change after Xu Yun disappeared, visibly becoming reclusive.

Although Little Niu appeared indifferent in human relations, he was an exception in front of the William family.

So all along,

he was very concerned about Lilani's situation and worried about her mental state.

Now with Xu Yun's return letter, perhaps this young lady will see things more clearly.

Thinking through this,

Little Niu returned his attention to the letter and continued to read.

"....The mathematical tools you invented are truly admirable, reaching heights far beyond my personal ability. Please allow me to express my highest respect to you."