

## **Scholar 171**

### Chapter 171

The bet was \$1000 USD.

Now, six years had passed. Even though the pentaquark particle was found, there were no signs that super-symmetric particles were found.

Although the standard model was proven correct again, he was still going to lose the bet.

This was because he overestimated the capabilities of CERN, and was too optimistic about the LHC upgrade.

In fact, betting against someone was a common occurrence in the physics world.

This was not the first time Frank Wilczek had a bet.

In 2005, he bet with the “beautiful scientist”, Jane Conrad. He was convinced that the LHC would detect Higgs particles whereas Jane disagreed.

The bet was chocolate coins served at the Nobel Prize awards ceremony. In the end, Frank won 10 chocolate coins.

However, he was not so lucky this time. He, unfortunately, lost the bet.

For these scholars, making a bet was a measure of work.

The problem was that Garrett Lisi was a real piece of work.

First of all, Mr. Lisi was not a physicist at all. He had a PhD in philosophy at the University of California.

Also, his PhD's biggest achievement was to use the Lie Group  $E_8$  structure to construct a unified theory. This theory was incomplete and was not accepted by the physics community.

Einstein's unfinished work had always been the treasure of theoretical physics. However this treasure was not just for physicists, but it was also for common folks.

Garrett Lisi was at least literate. He was at least smarter than those flat-Earth believers.

Due to this, he was named "King of Civil Science".

Although his mathematical theory of philosophy was laughed at by physicists and mathematicians, normal people believed in his schtick.

Because of this, Wilczek was embarrassed to lose this bet.

He was a Nobel Prize winner in physics, and he lost to the "King of Civil Science".

Although he admitted that he lost, and he even tweeted that he would fulfill the \$1000 USD agreement, it was clear that he was not as calm as his tweets.

This was not about the \$1000 USD, but that Lisi was quite disrespectful and he would brag online all day.

Recently, many people ridiculed Frank about this incident. Frank would constantly blame himself for being dumb.

It was too shameful!

Frank sat in the office that CERN assigned him. He was drinking coffee and reading an article about the pentaquark particle.

Suddenly, his assistant knocked on the door and came in.

“Mr. Frank, someone asked me to bring you this thing.”

Frank asked, “What thing?”

“It looks like a thesis,” answered the assistant.

Even though he was not in a good mood, he was still curious.

“Give it to me.”

“Okay.”

Frank took the thesis and flipped through the pages while he casually said, “There isn’t a name on here. Who brought this?”

The assistant replied, “The guy said that he’s an intern.”

“Intern?” Frank frowned, but he did not throw the thesis away. Instead, he continued to read the thesis.

Anyone that could get an internship at CERN was talented. If this thesis turned out to be interesting, Frank would be happy to help this intern.

This was why Frank was popular with people.

Frank was about to stop reading when he suddenly had a blank expression before it was replaced by interest.

He read a word on the thesis and the expression on his face turned serious all of a sudden.

He then placed the thesis down and looked at his assistant.

“How do I contact this person?”

The assistant immediately replied, “He didn’t leave a phone number, but he left an address. It’s the hotel near the CERN building. If you want, I can find him for you.”

“Find him for me. This thesis is interesting,” said Frank as he placed the thesis on the left corner of the table.

Normally speaking, any thesis on the left corner of the table had some value to him.

As for the pile on the right corner, their destiny was the paper shredder.

...

After handing the thesis to Frank’s assistant, Lu Zhou thought that it would take a few days to get a reply. He was pleasantly surprised to hear a reply so quickly.

On the morning of the next day, Frank Wilczek’s assistant went to the hotel to find him. He then brought him to the R1 1 building.

Frank immediately asked, “What do you think it could be?”

Lu Zhou said without hesitation, “Supersymmetric particles!”

Even though Lu Zhou knew that it was unlikely, he had to say this.

This was the same as venture capital meetings, it was a gimmick.

However, Frank was unconvinced. He smiled and shook his head.

“That’s not realistic.”

“But it’s possible. Maybe it could be something else. Whatever it is, it’s worth pursuing. Don’t you think so?” asked Lu Zhou. He then continued, “Do you want to bet? I’ll bet a hundred dollars that there must be something there.”

The old man’s eyebrows twitched and said, “There’s no need for a bet.”

Lu Zhou was stunned.

He heard that the old man loved to bet with others, so why did Frank refused to take the bet?”

Frank paused for a second before he continued, “I’m only slightly interested in your discovery. However, CERN won’t start the LHC for an incomplete theory. Also, you haven’t convinced me.”

“But I can give you a chance. If you can improve your theory by the end of the month, then at the European Nuclear Research Conference, I’ll recommend you to do a report at the conference. If you can convince me, I’m sure you can convince everyone else.”

Frank looked straight into Lu Zhou’s eyes.

Lu Zhou knew what this old man was waiting for.

He then took a deep breath before he responded.

He only said one word.

“Ok!”

## Chapter 172

Soon after, the conference room quieted down. The head of CERN, Lynn Evans, stepped onto the podium and began with the opening remarks.

“Thank you to the cooperation teams from various institutes and laboratories around the world for their contributions to this experiment. After years of unremitting exploration, we finally discovered pentaquark  $Pc^+$ . Our findings does not explain everything, but fortunately, the standard model once again predicts its existence...”

“... The physical properties of  $Pc^+$  particles have been completed by the LHCb International Research Cooperation Group. Please ask the responsible persons of each cooperation group to go to the stage for a presentation.”

The audience applauded. Evans nodded slightly before he gave the microphone to the head of LHCb research group.

Professor Gao slowly stood up. He nodded at Professor Lu before he then walked over to the aisle and to the back of the conference venue.

Professor Gao was the head of the China research group. He would speak on behalf of China and report on the full spectrum analysis.

When Professor Gao arrived to the backstage of the conference room, he suddenly saw a familiar face.

The other party obviously saw him as he stood up and took the initiative to say hello.

“Professor Gao, hello!”

“Hello, you are...”

“I’m Lu Zhou!”

Lu Zhou greeted Professor Gao and grinned.

Although he was a bit nervous in his heart, he controlled his emotion and did not look nervous at all.

He was nervous because this was completely different than the Princeton conference. Almost half of the world's top theoretical physicists were sitting here. Some of them had even won the Nobel Prize.

This type of international presentation conference was not comparable to the academic conferences.

Also, Lu Zhou was here with a different objective.

"Lu Zhou... You're Professor Lu's student?" said Professor Gao Yuanping as he had a moment of realization. Suddenly, he asked with surprise, "Why are you here?"

Lu Zhou smiled and sighed, "Long story..."

He was about to explain his matter in detail when a CERN staff member walked in all of a sudden.

"Is Gao Yuanping here?"

"Here," said Professor Gao as he nodded.

The staff member said respectfully, "It's your turn to make the report. Come with me."

"Sure, take me there."

The staff member nodded and Professor Gao looked at Lu Zhou with a strange expression. However, he did not say anything and merely walked away with the staff member.

...

On the stage, Professor Gao reported the work of China's full spectrum analysis and answered several questions from reporters.

After that, he went back to the backstage lounge and was ready to talk to Lu Zhou, but he could not find him.

"How strange..."

Professor Gao was confused. He then left the lounge and returned to the venue. He sat back down in his seat.

He then looked at Professor Gao and whispered, "Guess who I just met in the backstage lounge?"

Professor Lu looked at him in confusion as he asked, "Who?"

Academician Gao smiled and said, "Your student."

Professor Lu looked at his side and saw Yan Xingjie still sitting there. He then looked back and asked, "You're talking about... Lu Zhou?"

"Yeah," said Professor Gao with a nod.

Professor Lu asked, "Why is he there?"

Professor Gao shook his head and said, "I think it's strange too. I was about to ask him but he left."

Professor Lu raised his eyebrows. He felt something was wrong but he soon pushed the matter aside because the conference had entered into the next stage.



Reports on the full spectrum analysis of the  $P_c^+$  particles had come to an end. Next was the reports on the various LHC experiment findings.

Most of the people on stage were researchers who were involved in the experiment. Most of the people were from CERN and LHC.

After all, the experiment data was for a specific particle, but not all of the data was about the particle. The random collision of the proton beam produced some interesting new discoveries.

Some of these new discoveries were useful while others were useless.

It could even be said that the second half of the conference was the most interesting part.

If a more valuable discovery was found, CERN might even change the experimental direction of the LHC.

Professor Lu took out a small notebook and was ready to write notes.

Suddenly, he was stunned.

It was not just him that was stunned.

Yan Xinjue and Professor Gao was also shocked.

The person on stage was none other than...

His own student...

Lu Zhou.

...

On the other side of the venue, Frank Wilczek and Peter Higgs sat together and were chatting about the contents of the report.

“Don’t you think the recent LHCb discovery warrants a Nobel Prize?”

Peter Higgs heard his old friend’s question and shook his head, “There’s no doubt that this is the most valuable research result this year, but it might not be enough for a Nobel prize. This year’s medal should be awarded to the neutrino oscillation experiment. Do you want to bet on it?”

“Haha, no thanks,” said Frank when he heard the bet. Awkward, he coughed, “I recently quit gambling.”

“I can’t believe it. You’re quitting? What happened?” asked Peter Higgs as he looked at his old friend. He was astonished. Higgs did not go on Twitter, so he was not up to date with the recent events.

“Nothing, just something small. Let’s not talk about it,” said Frank. He cleared his throat and changed the subject, “Focus on the next report as it is the main event.”

Peter Higgs asked casually, “Oh, is there something worth looking forward to?”

“Of course, I’m confident that you’ll be shocked by the discovery,” said Frank. He grinned and continued, “Let’s bet \$100.”

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On the other side, Luo Wenxuan who was sitting next to Edward Witten also chocked.

Luo Wenxuan did not know how Lu Zhou, as a mathematician, was able to stand on stage at a place like this.

Did Lu Zhou really participate in the experiment?

Mr. Edward Witten was unsurprised. Instead, he was filled with interest.

He obviously recognized the man on stage and he was looking forward to the report.

The young man that shocked Princeton; what was he about to do now?

...

As Lu Zhou stood on the stage, he took a deep breath to try and calm his mind. He tried not to pay attention to the audience.

Once he was calm, he said, "Let me introduce myself. I'm from the University of Jin Ling in China. I'm honored to come here as an intern and be involved in this experiment. These opportunities allowed me to discover an interesting phenomenon."

Lu Zhou knew that these physicists did not care about his personal details, so he finished the self-introduction and began the PowerPoint presentation quickly.

"A month ago, I happened to be at the northern test site. When the 1TeV test collision happened, I observed a very special observation on the ATLAS detector."

Lu Zhou flipped to the next slide and pointed at the coordinates on the  $m_{\ell\ell}$  image. He said, "Doesn't this look amazing? We observed a few very special signals at 750 GeV."

Under the stage, Peter Higgs licked his mouth as he tried not to laugh out loud.

"This is the presenter you recommended?"

Frank smiled and said, "That's right."

Peter could not help but ridicule him, "Did you teach him about the theory of excessive fluctuations? I taught my students that."

“I know that you want to say that this discovery is worthless,” said Frank with a smile. He continued, “Do you want to bet \$100? I bet he can convince you.”

Peter Higgs looked at him.

“I don’t know where you got this confidence. One day, you’ll lose all of your Nobel Prize money.”

Frank smiled in disapproval, “I don’t think so.”

...

When the people sitting in the stage saw Lu Zhou’s “research results”, they chuckled.

Although they laughed quietly, Lu Zhou was still able to hear them. It was like a blade piercing through his ear.

Undoubtedly, most people were unconvinced of the data during the test runs.

Although the few isolated cases looked weird, it was worth nothing. This was because they were classic quantum mechanics uncertainties. These phenomena could be perfectly explained as a small amount of energy that was randomly generated.

Only a few people showed an expression of interest.

However, this was in Lu Zhou’s expectations so he tried to ignore the laughter.

“I know that some people will think that this must be a two-photon signal or an error such as quantum fluctuations...”

“... Therefore, I deliberately found the data from 2012 and analyzed it statistically. I established a probability model...”

Lu Zhou flipped to the next slide.

Suddenly, the slide was filled densely with formulas.

In fact, similar phenomena had been seen in the 2012 data and it had also appeared in both ATLAS and CMS detectors. It would be a miracle if this was just a coincidence.

This was his biggest supporting hypothesis!

Lu Zhou grabbed the PowerPoint and said confidently, “I checked the data on this section again and again and confirmed that the results of the phenomena were not two-photon signals. There must have been a collision in this energy zone...”

“... And according to the probability model behind me, I can say confidently that if the data collected on the ATLAS and CMS detectors are correct, then there definitely is a characteristic peak in the 750 GeV energy zone!”

“... Maybe it’s a new and heavier Higgs particle, or maybe it’s a gravitational force, all kinds of possibilities exist. Maybe...”

Lu Zhou paused for a second. He looked around in the tense venue and took a deep breath before he continued to speak, “Maybe this could be the last piece puzzle we have all been searching for...”

“... The supersymmetric particle!”

The venue was quiet.

People had not expected this conclusion.

Some people thought that the data was worthless, but after seeing the argument, doubts were raised in their minds.

If the number of samples accumulated to a sufficiently large value, the probability of this characteristic peak appearing was as high as 84.5%. This was already worth researching.

This discovery seems to be...

Interesting?

Luo Wenxuan sat in the back row of the conference room. He looked at the PowerPoint as he quickly checked the calculations.

Obviously, some people were ahead of him.

This person was the winner of the Fields Medal, Edward Witten.

"He's correct," said Witten as he stared at the PowerPoint and nodded. He said, "At least mathematically speaking."

Luo Wenxuan had a strange look on his face and he asked subconsciously, "You mean that he found a new particle?"

"I didn't say that. Neither physicists nor mathematicians can directly see the particles," said Witten as he shrugged and smiled. He then added, "The only thing that can find the particles is the collider. All we can do is run the collider."

Lu Zhou's presentation shocked the audience.

The sound of applause reverberated through the venue and it gradually became louder and louder.

When Lu Zhou heard the applause, he felt his heart beating faster.

The situation was already clear.

It did not matter if the 750 GeV meant nothing. All Lu Zhou wanted was to inform CERN of this possibility.

The efforts that he had exerted this month was not wasted.

He still had not thought about what to do beyond this presentation.

Lu Zhou smiled and relaxed his clenched fist.

He then faced the thunderous applause and bowed.

After that, he walked off stage.

#### Chapter 174

Many people looked at their watches; some even left the venue. They could not wait to get back to their labs and start writing a thesis on this new phenomenon.

It was foreseeable that if the probability of the occurrence of this characteristic peak was really high, CERN would definitely start using the LHC to further investigate this clue.

If the data collected on the LHC proved that there really was a characteristic peak at 750 GeV, then this could mean a Nobel Prize!

It was no doubt that this clue was valuable.

Peter Higgs said in amazement, "... Unbelievable, this is the amazing discovery you talked about?"

“Yes,” said Frank Wilczek who sat next to him. He smiled and continued, “I read his thesis two weeks ago. The paper wasn’t completed yet at that time, but I was confident that there was a clue in there somewhere.”

Peter Higgs thought for a long time before he asked, “From a mathematical point of view, do you think this possibility exists?”

Frank smiled, “I think that it’s worth trying.”

“You’re right, I think so too,” said Peter Higgs as he nodded. He stood up from his seat and said, “I have some new theories about this clue... I have to go.”

Frank stopped his friend, “Wait a minute.”

Peter Higgs, “Is there anything else?”

Frank smiled and rubbed his thumbs, “You forgot the money.”

Frank won the bet definitively.

It seemed that the gambler won this time.

Peter Higgs paused for a second before he threw a crumpled Franklin on the chair. He then left quickly.

...

On the other side of the venue, Professor Lu said, “This kid is interesting, no wonder he’s my student.”

Yan Xinjue could not help but ask, “But Professor, I thought you said that this was a quantum fluctuation?”



"I never said that," said Professor Lu Shenjin. He had a serious look on his face as he continued, "I only said that it's possible."

He still thought it was possible.

This was an important clue, but experiments were still needed to prove anything.

Yan Xinjue continued to ask, "But what if there's a characteristic peak at 750 GeV, how can this be explained with quantum chromodynamics?"

Professor Lu nodded and said, "It's unexplainable as this is beyond the standard model."

"Then why..."

"There's no reason why," said Professor Gao who interrupted them. He smiled and said, "Physics doesn't comply with our wishes. It exists on its own. We need to find new puzzles to perfect our theory."

Any physics conclusion was imperfect.

Therefore, even if Einstein proved the theory of relativity, no one would jump out to say that Newton was wrong.

Similarly, if one day someone found out that relativity did not apply at more distant galaxies, no one would say that Einstein was wrong. Physics was constantly improving.

This was the same for the standard model.

Yan Xinjue held his breath and asked with an exciting tone, "Then you're saying that Lu Zhou's discovery can bring forward a new physics theory?"

Professor Gao thought for a moment before he gave a vague answer, “Maybe.”

That was right – Maybe.

For a master’s student like Lu Zhou, a “maybe” was impressive.

...

Lu Zhou came here at the beginning of May, and he had already been here for two and a half months.

As he stared at the calendar, he could not help but contemplate.

If he recalled correctly, right now his friends from Dorm 201 should have finished their final exams. Only students who were studying for the graduate entrance exam would still be at the University of Jin Ling.

If his life trajectory did not deviate from its course, then he would be a third-year student in two months. He would have to think about working or continuing his studies...

However, now, he did not have to think about those superficial problems.

He had to think of even more problems, but just different ones.

Two weeks ago, the European Nuclear Research Summit had ended and the researchers from China Cooperation Group had returned to China.

Lu Zhou was supposed to fly back with Yan Xinjue and Professor Lu Shenjian, but the professor ditched him and told him to fly by himself.

It was a long story.

After the end of Lu Zhou's report, Lynn Evans gave him a new contract and sent him an invitation.

Lu Zhou was previously a CERN intern, but now he was a CERN researcher.

In short, he got promoted.

For an international research institution, the turnover rate of the researchers was very high. For example, at the famous Argonne National Laboratory, the ratio of temporary workers to permanent personnel was close to 1:1.

CERN probably had the highest turnover rate of all research institutions.

CERN had different personnel contracts for researchers from different countries and experiment institutions...

These contracts did not carry a salary, so it was not an employment agreement. They were more like proof of identity.

For example, Yan Xinjue and Professor Lu Shenjian had these proof of identities.

As for the use of these identities...

In addition to easier Visa application and entering research areas, they were pretty useless.

Also, if he wanted to earn some extra money, he could use this identity and signed a contract with another lab.

Of course, Lu Zhou did not stay for a "Summer job". He stayed because CERN modified the experiment arrangements to accommodate the clue that he found.

Lu Zhou wanted to stay and witness the results of his own discovery.

Of course, this was only one of the reasons.

The other reason was that since the system did not end his mission, he had to continue to work here.

He was worried about the cancellation of the system mission, so he did not want to leave.

In short, experiments like this had a high variance. It could take a month or even a year.

Therefore, Professor Lu Shenjian ditched Lu Zhou.

After all, academicians' times were precious. Professor Lu Shenjian could not just stay here and waited for the results.

However, Professor Lu did not completely ditch Lu Zhou. He gave Lu Zhou a \$3000 Euro living allowance. He also paid for the hotel room until the end of July.

After all, if this discovery was confirmed, it would be great news to the research community in China.

Professor Lu Shenjian was looking forward to the results.

Chapter 175

Shi Shang replied, "Traveling for free? I'm jealous."

Free traveling?

I guess that's what I'm doing.

Lu Zhou remembered that he had not spent a single dollar from his own pocket on this trip.

Shi Shang, "Uh, when you come back to campus, just put the stuff on my table. Please don't send it to my house. There's no space there."

Lu Zhou, "Sure, anything else?"

Shi Shang shook his head, "Nothing... Oh yeah, how come I haven't seen you on Weibo the past few days?"

Lu Zhou said, "What do you mean? I just posted some photos on Weibo."

Shi Shang, "No, I meant, I haven't seen you humblebragging."

Lu Zhou: "..."

F\*ck, what do you mean you haven't seen me humblebragging.

You sound as if I humblebragged all the time.

Lu Zhou hung up the call and threw his phone on the bed.

He looked at the calendar. When he saw that it was almost the end of the month, he sighed.

He did not know when the experiment would end.

Hopefully, he was correct.

If not, no one would blame him. However, he would not feel good about it.

...

Lu Zhou originally thought that it would take a month for the results to be seen and so, he was about to exchange more Euro.

He did not expect the good news to come so suddenly.

The first person that told him this news was Professor Grayer, who was responsible for monitoring ATLAS.

On the phone, Professor Grayer did not say much. He only told Lu Zhou to go to his office.

The first thing Lu Zhou said as he stepped foot into the office was...

“What’s the result?”

“Your speculation is correct,” said Professor Grayer. He placed a few sheets of papers on the table and said with an unbelievable sentimental tone, “The results are quite optimistic. We have observed the characteristic peaks that you predicted on CMS and ATLAS. Many people are surprised by this result.”

Lu Zhou was relieved as the knot in his heart was finally loosened.

Although the dust had not settled yet, the exploration had only just begun. Lu Zhou’s work had finally come to an end.

Professor Grayer looked at Lu Zhou and said, “Although we can’t determine what it is, we are sure that there’s something there.”

Lu Zhou took the sheets of papers and casually said, “I hope you guys can find that thing... Please tell me if you guys find something.”

Professor Grayer asked, “You’re going back?”

“Yes,” said Lu Zhou as he nodded and smiled. He added, “I already got the results that I want. Also... My hotel booking is up.”

Even though Lu Zhou really wanted to know what the signal was, he could not wait here forever. It could take years.

Also, if he guessed correctly, his system mission should have been completed by this point.

He planned to return to China, received the mission rewards, and see what his new missions were.

“Before you leave, can you do me a small favor? It won’t take long, just three days,” asked Professor Grayer. He then said, “I can pay for the hotel room.”

Lu Zhou asked, “What favor?”

“It’s an interview with Nature Weekly,” said Professor Grayer. With a smile, he added, “I have a friend that works there as an editor. He’s not an expert in physics, but he knows a lot about particle physics. He was even more surprised than me when he heard about your discovery. He wants to interview you. He flies here on the 2nd of August... So, can you stay here for two more days?”

Lu Zhou smiled and said, “Of course I can.”

Although he did not like to do media interviews, he was still willing to do any favor for Professor Grayer.

After all, this professor took good care of him. Professor Grayer was the reason he could present his 750 GeV clue.

Plus, this favor was not too much of a trouble.

...

After the nuclear research conference in July, CERN could not wait to announce the discovery of the pentaquark  $P_c^+$ . Which, as many expected, became the world's most eye-catching physics news.

Of course, there was some unexpected news as well.

For example, the characteristic peak that appeared at 750 GeV...

Yes, "appeared".

From Lu Zhou's predictions in the report, CERN adjusted the collision test and made the collision energy 1 TeV.

Then the final results were quite amazing.

When the number of samples accumulated to a certain extent, the probability of the characteristic peak at 750 GeV increased exponentially. This could not be explained by our current knowledge of quantum chromodynamics.

Some people speculated that this was a decay signal, or it was a two-photon signal generated by gluon polymerization. Some also speculated that it was the last piece of the standard model puzzle that the physics community had been looking for for years: The Super Symmetric Particle.

Of course, some people were also pessimistic and said that it could just be quantum fluctuations. Even though CERN researchers observed this phenomenon on both ATLAS and CMS detectors.

In less than a month, hundreds of thesis attempting to explain the characteristic peak were submitted. This doubled the number of particle physics theses submissions.

Many well-known physicists made bold speculations on this characteristic peak.

They had to as these theoretical physicists loved to make predictions.



High-energy physics was unlike condensed matter physics. People's observations could not keep up with the speed of theoretical progress. The standard model could not be seen, but it was well accepted.

People could not just write bullsh\*t physics theses and they could not make up physics.

However, this 750 GeV characteristic peak gave people an opportunity to write bullsh\*t theses. Not to mention, there was a potential Nobel Prize attached to it.

What if they could bullsh\*t their way into a Nobel Prize?

It was possible.

After all, even the collider did not know what the 750 GeV signal meant...

However, the focus on the media and the public was elsewhere.

For the laymen watching from outside, this was even more surprising than the pentaquark discovery.

This was because the person that reported the finding...

Was an intern!

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"... The intern who found the 750 GeV characteristic peak is actually a master's student from the University of Jin Ling. His achievements are not only in the field of physics, but he also received the Best Young Speaker Award at the Princeton mathematics conference earlier this year. He's the one that proved the twin prime conjecture!"

"... Our reporter interviewed Mr. Francis, the president of the Federal Mathematical Society, and Mr. Edward Witten, the winner of the Fields Medal. Mr. Francis commented that this is a young scholar with excellent thinking and innovation abilities while Mr. Edward Witten thinks he may become the first Chinese scholar to win the Fields Medal."

Originally, the 750 GeV news did not cause a huge commotion. It was only circled around in the particle physics community. It was only after the Focus Weekly report that the news was pushed to the peak.

People were already surprised that an intern was able to discover this clue, but they were even more shocked to learn that this intern was also nutty in mathematics.

The news had not traveled to China yet, but it had already caused heated discussions on western social media.

An Ivy League campus forum...

[Sh\*t! I was on holiday, but yesterday my supervisor called me and told me to come back to campus. He said that I have a new research project... Crazy.]

[That's good :)]

[Maybe not, what if CERN confirms the signal in a month?]

[Impossible. CERN is very slow at operating the LHC. It could take years. You'll have time to finish your thesis.]

American student forum...

[Omg, even the Fields Medal isn't good enough for him. He must be going for a Nobel Prize...]

[He's still far from a Nobel Prize, lol, but he is pretty strong. Theoretical physics is the most difficult discipline to produce results.]

[Speaking of which, there's been an insane amount of particle physics theses being submitted these few days.]

[This guy's too good. Will I be this nutty when I'm a master's student?]

[Wake up, this dude's only supposed to be an undergrad.]

[... F\*ck.]

...

After the Focus Weekly interview, other major media outlets also reported on this incident.

Although many media outlets carried out investigations on Lu Zhou, Nature Weekly was the first to interview the Intern.

Of course, he was no longer an intern but a formal researcher at CERN.

August 2nd, noon.

Professor Grayer drove Lu Zhou to a coffee shop in Geneva. He then introduced him to the female journalist from Nature Weekly.

"This is Ms. Belinda, an Oxford graduate," said Professor Grayer. He then looked at Belinda and said, "This is Lu Zhou."

The two nodded at each other.

However, Lu Zhou felt a sense of awkwardness in the air.

This source of the awkwardness came from Professor Grayer. On the other hand, Belinda had a natural smile.

"Hello, Ms. Belinda," said Lu Zhou as he reached out his right hand.

"Hello, nice to meet you," said Belinda as she smiled. She then continued, "This interview might take a while. Can we start now?"

"Of course," said Lu Zhou with a smile. He then said, "I hope my answers will satisfy you."

After all, Nature Weekly was a somewhat scientific and rigorous journal. It was a lot more sophisticated than those Chinese "Daily News" media outlets.

No wonder Belinda was an Oxford graduate; her questions were all professional questions.

For example, her first question.

"How did you find the 750 GeV characteristic peak?"

"An accident," said Lu Zhou. He smiled and added, "My colleagues thought that the 750 GeV peak was just an accident. But this accident appeared on both ATLAS and CMS, so it can't be just a coincidence. Therefore, I asked Professor Grayer to find 2012 and 2013 LHC records, and the results were interesting."

"750 GeV characteristic peak?"

"Not quite, but close," said Lu Zhou. He shrugged, "I had limited samples, so the information I could get was quite limited. Therefore, I tried to prove it from a statistical model probability perspective. When this probability was large enough, CERN would have a reason to undergo this experiment. As for this characteristic peak, it was found by the collider, not me."

Ms. Belinda smiled and typed some words in her laptop before she continued to ask, "I noticed that you used a lot of uncertain words. Is that just a habit or because of the rigorous nature of physics?"

Lu Zhou nodded and said, "It's the latter. Because even now, we don't know what it is."

Belinda, "What do you think the particle could be?"

"I hope it's a supersymmetric particle. If it is, then our biggest trouble will be solved. But... That's just my personal wish. Things don't always go smoothly," said Lu Zhou. He thought for a moment before continuing, "If I had to guess, I'll rather believe that it is something that we don't understand... Like dark matter."

Belinda opened her mouth in surprise and asked, "Amazing speculation... But why?"

"Because the signal is too unstable," said Lu Zhou with a smile. He continued, "The Hadron Collider itself is the accumulation of countless small probability collision events, and the appearance of this signal shows a kind of situation that is difficult to explain with our existing theories..."

"... But it also could just be a two-photo signal..."

"... But hopefully, it could lead us to "new physics..."

Chapter 177

Lu Zhou looked at him with astonishment.

<i>F\*ck, Really?</i>

That Belinda girl looks like she's in her twenties.

Maybe it was because of her makeup...

Professor Grayer looked at Lu Zhou as if he knew what Lu Zhou was thinking. He said, "Don't think that I'm old. I'm only forty years old this year. I can still go for the Fields Medal!"

Lu Zhou said, "But the next award is in 2018, so you'll be 43 by then."

"I'm only kidding, plus I don't do mathematics," said Professor Grayer. He coughed and changed the subject, "Speaking of which, Lu Zhou, I heard your friend Yan Xinjue said that you're already twenty years old, but still single. When I was your age, I already had two girlfriends. Is there nothing else you're interested in, other than mathematics?"

Lu Zhou was embarrassed, so he smiled and said, "Of course not."

Professor Grayer smelled some gossip, so he raised his eyebrows and asked, "Like what?"

Lu Zhou, "There's also physics."

Professor Grayer: "..."

...

When Lu Zhou went back to his hotel, he began to pack his bags.

He had already been in Europe for almost three months.

He only brought some clothes when he came here, but now his suitcase was filled with stuff he bought. He did not know if customs would give him a hard time.

Regardless, his trip to Europe finally came to a successful conclusion.

He could not wait to fly back to China and received his mission rewards.

He should at least get an S+ evaluation, right?

Then, his next mission could be a reward mission.

As for other possibilities, Lu Zhou did not want to think about it.

It would be preposterous if he did not get an S+.

Lu Zhou was stuffing the milk powder he bought for his sister into his suitcase when his phone rang.

He picked up his phone and asked, "Hello?"

"It's me."

Lu Zhou was stunned for a second.

He asked cautiously, "You are?"

A violent cough came from the other side as if the person was choking.

After a while, the old man recovered and said with a deep voice.

"It's Frank Wilczek, we met a month ago!"

The f\*ck?

Lu Zhou was astonished when he heard his name.

Why is he calling me?

It's been a month since the meeting, why isn't he in America?

“Sorry, I didn’t recognize your voice...” said Lu Zhou. He quickly changed the subject and asked, “What’s up?”

Frank asked casually, “Are you free right now?”

Lu Zhou, “Of course.”

“Then come to my office, I have something to tell you.”

The old man did not elaborate further. Instead, he hung up the call.

Lu Zhou’s flight was tomorrow night, so he still had time. He walked to the old man’s office while being confused.

When he saw Frank Wilczek, the latter gestured him to sit down. Frank then asked his assistant to bring them two cups of coffee.

As the old man stared at the coffee, he spoke slowly.

“The 750 GeV particle may start a generation of new physics. If it’s real, the value could be higher than a Nobel Prize. All theoretical physicists are interested in this, I am no exception.”

Lu Zhou stayed silent while he waited for the old man to continue.

Frank paused for a second before he continued, “I’m optimistic about your talents in mathematical physics. If you are interested, you can join my research. We can solve this “puzzle” together.”

Over the past month, almost all of the theoretical physicists around the world had been trying to solve this puzzle. To this day, nothing of value had been achieved.

There was still a lot of content to be solved.



When CERN's LHC further revealed the data on 750 GeV, maybe someone would get a Nobel Prize.

Although Frank himself had already won a Nobel Prize, there was no rule against winning it a second time. There had only been a few people that won it twice, so it was unsurprisingly a very difficult task to accomplish.

If this discovery was amazing enough, maybe it could...

Having an opportunity to engrave it in history was rare, so no one wanted to pass on this opportunity.

Lu Zhou asked, "Finishing the puzzle... Are you referring to the theoretical explanation of this unknown particle?"

"Yes," said Frank as he nodded. He added, "In fact, not only am I a CERN's researcher, but I also work at the theoretical physics department at MIT. By the way, are you interested in pursuing a PhD from MIT?"

Lu Zhou was stunned. He did not know that this old man would give him such an offer.

MIT was one of the top physics universities in the world. Not to mention, the invitation was from a winner of the Nobel Prize.

If the University of Jin Ling did not create a personal development plan for Lu Zhou, he might have accepted this offer.

In the end, Lu Zhou did not accept it as he was a man of his words.

Rejecting this offer was almost disrespectful, so Lu Zhou tried to reject the old man smoothly.

He shook his head and said, "Thanks for your offer, but I'm sorry... I already promised to study PhD at Princeton."

“Princeton... Princeton is strong at mathematics,” said Frank with a smile. He did not seem to care as he said, “But even though you’ve selected Princeton, my offer is still valid. After all, in this era, many things can be communicated through the Internet. Maybe you can reconsider my offer...”

Frank paused for a second before he continued, “If you are interested in the Nobel Prize...”

Lu Zhou, “...?!”

He was shocked.

He did not know what to say.

Chapter 178

Actually, even if he knew, he would not think much of it.

After all, this was nothing compared to a potential Nobel Prize.

Even if CERN found something interesting at the 750 GeV energy zone, Lu Zhou might not even win a prize. Therefore, he never imagined himself winning anything from this.

As for why?

This was part of the rules for the Nobel Prize.

As the research work in the field of theoretical physics became more and more systematic, it was worth talking about who deserved the credit. According to practice, the Nobel Prize medal would not be awarded to the discoverers of the particles, nor would they reward the researchers who operated the Hadron Collider, but they would be more inclined to be awarded to the proponents or perfectors of the theory.

From an academic standpoint, the work of the first two while important, they were not crucial. Anyone could randomly stumble upon discovery and anyone could operate an experiment.

On the other hand, the latter's work was crucial.

This was why the 2013 Nobel Prize was awarded to the authors of the Higgs mechanism and the Higgs boson theory namely Peter Higgs and Francois Englert. This theory was proposed in the 1960s. As for the CERN researchers who participated in the experiment, although they all contributed, the Nobel Prize could not be given to an organization. Therefore, it was impossible for people to share the prize.

Another example was the neutrino oscillation found in the Daya Bay reactor in China. It was nominated for the Nobel Prize in 2015. However, the nominees were Professor Takashi of Japan and Professor Arthur MacDonald of Canada.

Some might ask, why not randomly fabricate a fictional particle and then set a lot of various physical properties about it? After that, one just needed to wait until it was discovered by others so that one could win the prize.

Theoretically, it was possible to do this.

This was also why there was a sudden influx of theoretical physics thesis submissions after the release of the 750 GeV data. Many people were betting on this theory.

However, the possibility of getting a Nobel Prize through this manner was low.

A new theory, or a new physical model, must be at least theoretically established and logically autonomous. Just like the superstring theory, although it was increasingly marginalized in the field of theoretical physics, no one could falsify it theoretically.

If one could not achieve logical autonomy, even if one found the Higgs particles, or claimed to find gravitational waves, one would not be recognized by the academic community.

This was also why common folks would never get the Nobel Prize. They could submit theses, but they would not understand the logic and formulas behind it.

If this particle was found to be a supersymmetric particle, then the Nobel Prize might be awarded to Gongyi Hongcheng. He proposed the supersymmetry and supersymmetric particles in 1966. As for Lu Zhou, was it possible for him to win?

Of course, it was possible.

Not just Lu Zhou, but Frank Wilczek also had a chance.

Continuous improvement was not only the means of observation but also the theory corresponding to it.

For example, if the 750 GeV signal was actually a supersymmetric particle, this would break the current knowledge of the standard model. Then, there could be a “Lu model” or “Wilczek model” to explain this particle. That might be worthy of a Nobel Prize.

However, this was much more difficult than proving a mathematical conjecture. It was impossible to accomplish by one person.

That was why, the day before yesterday, Frank gave Lu Zhou an invitation to solve this problem together.

The two agreed to communicate through email and complete this theory together.

The main work of establishing this theory would be done by Frank and his PhD student. Lu Zhou, on the other hand, would mainly be responsible for calculations.

Since Lu Zhou showcased his mathematical abilities at the European Nuclear Research Conference, Frank Wilczek decided to invite him.

This work would definitely take up a lot of Lu Zhou’s time. However, if he could win a Nobel Prize, it would be worth it.

Even if it was just a chance of a Nobel Prize...

...

It was dark when Lu Zhou took off, and it was still dark when he landed.

The plane glided through the dark night and landed slowly on the runway.

Although Professor Lu Shenjian already told Lu Zhou that Yan Xinjue would come to pick him up, Lu Zhou did not want to trouble Yan Xinjue, so he did not contact him.

Lu Zhou dragged his suitcase and walked outside. Just as he was about to call for a taxi, he saw someone waving at him.

When he saw the person, he was shocked.

Yan Xinjue?

Yan Xinjue carried Lu Zhou's suitcase into the car. Once he sat in the driver's seat, he said, "What were you doing at the airport? I've been waiting here since 10 o'clock before I finally found you."

"Sorry, my flight was delayed... Also, how did you find my flight?"

"Grayer told me," said Yan Xinjue as he steered the wheel. He asked, "Are you going back to school?"

Lu Zhou smiled and said, "Yeah, thanks."

"It's fine, we're all friends here. This is just a small favor," said Yan Xinjue with a smile. He then said, "Lu Zhou, you earned great respect for our Chinese LHCb team! I haven't seen Professor Lu brag about anyone that hard at a meeting. Even the professor from Shuimu University was praising you."

When Lu Zhou imagined the scene, he wanted to laugh. To be honest, he was not surprised.

He was a potential Nobel Prize winner, so this type of affirmation did not surprise him.

Yan Xinjue, "Speaking of which, don't you want to learn how to drive?"

Lu Zhou thought for a moment before he said, "I'll learn when I'm free. I don't need to drive right now."

Student Yan, "What do you mean you don't need to? If you're going places, having a car is useful. You must be rich from all those awards. Don't tell me you spent it all."

Lu Zhou smiled and said, "I've been saving it for a house."

Yan Xinjue sighed and said, "Not bad, thinking of buying a house at your age. This must be because of Professor Lu. He taught you well."

Lu Zhou asked, "Do you have a house?"

Yan Xinjue suddenly had a weird expression as he said, "Hopefully I can save up the down payment by the end of the year. I want to buy a house in Beijing, but it's kind of difficult... When did you get the idea that I'm rich?"

When you were spending money in Switzerland...

Lu Zhou remembered that the money he spent was all Professor Lu's money. Maybe Yan Xinjue was not rich after all.

Lu Zhou, "Is it that difficult?"

Yan Xinjue sighed and said, "That's how theoretical physics research is. Didn't you go on a project with Professor Li? Why didn't you go and do materials physics? Why did you come to energy physics?"

Lu Zhou did not know how to answer this question. He could not say that it was because of the system mission.

Of course, even without the system mission, he was still interested in particle physics. Otherwise, he would not have chosen mathematical physics.

Lu Zhou replied in an uncertain tone, "Maybe I just like science?"

Yan Xinjue was speechless.

Lu Zhou was wondering if his answer sounded too fake when Yan Xinjue suddenly sighed and said, "Probably, this is why I'm not as good as you..."

Lu Zhou, "...?"

This tone...

He believed me?!

Chapter 179

It was only early August so the school was still on summer vacation. As such, it was dead silent.

Thank god his dorm room was on the second floor, otherwise, he did not know how he would carry this heavy suitcase up the stairs.

Once Lu Zhou opened the door, he threw his suitcase aside. He then took a shower first before he climbed into his own bed.

As he laid in bed, he whispered, "System."

When he opened his eyes, he was met with pure white.

He could not wait to open the information screen. He then reached out to the semi-transparent mission panel and clicked.

[Congratulations, User, for completing the mission!]

[Mission completion details are as follows: Successful participation in the LHCb China Cooperation Group, participation in the “B1 partition data test” and “full spectrum analysis” of the pentaquark “Pc+”, and found clues in the 750 GeV energy region.]

[Mission final evaluation: S+]

[Mission rewards: 100,000 physics experience points. 500 general points. One chance of lucky draw (100% sample)]

[Additional rewards: 50,000 mathematics experience.]

A hundred grand?

When Lu Zhou saw this number, he could not breathe and his heart skipped a beat.

He then quickly looked at the pop-up text.

What is this?!

I get 50,000 mathematics experience points as well?!

He almost forgot to breathe.



This system finally treated him well.

He had received S+ evaluations before, but this was the first “additional award” that he received.

Is it because I found a 750 GeV energy zone clue?

As Lu Zhou stared at the mission rewards, he immediately started to think carefully.

I don’t know how the system evaluates the missions, but this situation of having an additional award is out of my expectations.

Lu Zhou still remembered that at the Princeton conference, he also received an S+ award. However, at that time, he only received 42,000 mathematics experience points and no additional award.

“... Which is saying that the 750 GeV clue is more valuable than the twin prime conjecture?” thought Lu Zhou. He rubbed his chin as he continued to think carefully.

The system’s “intellectual property” was horrible and it showed some unexpected clues as small details.

Maybe the system had more information on the 750 GeV signal. Although Lu Zhou did not know what the particle was, it must be significant. At the very least, it was significant enough for 100,000 experience points and a 50,000 additional reward.

However, although this clue was exciting, there was no use thinking about it now.

After all, there was no LHC in the system space. If Lu Zhou wanted to figure out what the signal was, he could only wait for the CERN’s collision experiment.

He took a deep breath before he said loudly, “System, open my characteristic panel!”

[

Core science:

A. Mathematics: Level 3 (54,000/100,000)

A. Physics: Level 3 (53,100/100,000)

C. Biochemistry: Level 1 (4,000/10,000)

D. Engineering: Level 1 (0/10,000)

E. Materials science: Level 1 (3,000/10,000)

F. Energy science: Level 1 (0/10,000)

G. Information science: Level 1 (2,900/10,000)

General points: 2475 (one lucky draw ticket)

]

His physics level was upgraded to level three and it almost caught up to mathematical physics.

If he wanted to continually upgrade his physics level, he would have to level up his mathematics first. This was because mathematics determined the upper-level limit of other disciplines.

As expected, mathematics was his cup of tea.

Lu Zhou slid his fingers on the information screen and turned off the characteristic panel. He then turned his sight on the lucky draw.

Finally, the exciting part came.

This lucky draw was quite exciting as it would be 100% of a sample. He did not have to worry about getting a soft drink again.

Lu Zhou hoped that he would not get a rubbish sample. At the very least, he should receive some focus capsules.

Although he did not need to rely on the focus capsules anymore, it was still useful for all-nighters.

“Begin lucky draw!”

Lu Zhou took a deep breath as he looked at the spinning roulette. He then shouted.

“Stop!”

[Congratulations, User, a sample is given!]

Well, of course.

Let’s see how good it is!

Lu Zhou squeezed his fist and looked at the screen.

[Sample awarded: Scanner gun (one-time use)]

Lu Zhou, “...?”

This scanner gun sounds cool...

But what's this one-time use?

It's going to disappear after one time?

Lu Zhou wanted to curse at the system, but he stopped.

He remembered that the USB that he copied Xiao Ai from disappeared after he used it once.

If the system said one-time use, then it probably could only be used once.

He did not know why there was this restriction.

Lu Zhou continued to look at his mission panel because the last time he received an S+, the mission was a reward mission.

He then clicked on the mission panel.

[

[Reward mission is activated! (Give up at any time without spending general points)]

Description: Since User has already solved the most difficult form of  $K=1$ , why not solve the Polignac's conjecture?

Requirements: Solve Polignac's conjecture before 2016

Reward: ???

]

Lu Zhou: ? ? ?

What do the three question marks mean?

It didn't tell me the rewards.

Does this mean that the rewards are three question marks?

Lu Zhou was speechless.

It seemed that this system was becoming more and more dishonest...

Chapter 180

The method would be an entirely different process. The proof of the twin prime conjecture only gave Lu Zhou an idea. To prove Polignac's conjecture, Lu Zhou would have to create an entirely different proof method.

Even though his mathematics level was now Level 3, it would still be difficult to complete this proof.

The hardest part was that the system required him to complete it before 2016.

This meant that he had to solve this problem in 2015.

On the other hand, the reward was also random. However, Lu Zhou thought that if the twin prime conjecture gave him 40k experience points, then this must be more than that.

Furthermore, this was a reward mission.

Therefore, he was still quite looking forward to this reward.

...

Once Lu Zhou accepted the mission, he left the system space. He fell asleep right away, and only woke up when it was afternoon.

When he woke up, he realized that he had some missed calls.

The calls were all from Professor Lu's office. Lu Zhou guessed that Yan Xinjue told the old professor that he had returned to China.

Anyway, since he was going to Professor Lu's office later, he did not return the call.

Before lunch, he still had something important to do.

Lu Zhou then climbed down from his bed and brushed his teeth. He then entered the system space again and opened his inventory.

[Scanner gun (one-time use): Able to scan the internal structure of an object with a volume of 1 cubic meter. Able to analyze its structure and composition.]

The description was short, but Lu Zhou kind of guessed how he could use the thing.

The potential use of this item was high. He could use it to steal intellectual properties, or reverse engineer an Ironman suit. Basically, he could re-create any piece of technology as long as he had the materials.

The question was, how should he use it?

“I can only use it once... I can’t even test it?”

When Lu Zhou looked at the icon in his inventory, he was a little hesitant.

He wanted to maximize his return on this reward.

There were three items in his inventory. There was the Debris 1, the old “two-hour energy enhancing needle”, and an old can of Sprite.

Therefore, he had three choices.

He could either scan the debris, the needle, or maybe even the Sprite.

The first option would inform him of the debris battery’s material, but Lu Zhou did not know how valuable that information was.

Also, he did not even know the technology behind the battery. He guessed that it was probably some kind of legendary lithium-air battery.

As for the second one, it was considered a good sample. From the sample’s description, the effects of the needle were strong and had no side effects. Maybe it had Captain America effects...

As for the last one, he could receive the recipe for the “Future” branded Sprite. He could then re-create the beverage easily... Unlike the other two.

After some thinking, Lu Zhou finally chose the first option.

He had big dreams.

The short term gain of the third option was large and the technical threshold was not high. It was also delicious. However, the potential for development was too low. Furthermore, it was difficult to apply for patents on beverages.

As for the second option, while the technical aspect was interesting, it was also too risky.

The first option was more like a gamble.

Something that was destroyed to this extent could be anything.

“I’ll just gamble it?”

Lu Zhou took out Debris 1 from his inventory. He then closed his eyes and exited the system space.

He felt the cold and light metal in his hand. He then placed the broken battery on the table, before he shot the scanner gun at the battery.

He then heard a soft “Bang” sound. A cone-shaped blue holographic light covered the battery.

It was like this blue light was scanning every surface and every inch of the debris.

Lu Zhou’s eyes nearly popped out.

F\*ck me, this high tech system really is high tech!

This blue scanning light alone would be worth a Nobel Prize.

The standard model was no match against this thing!



A normal person would not think much of this, but for a mathematical physicist like Lu Zhou, the existence of this thing was a miracle to him.

He did not know how to explain this phenomenon.

Suddenly, the blue beam gradually disappeared.

The broken battery was illuminated. It looked as if someone did a paint job on it.

The scanner gun in Lu Zhou's hands slowly turned into a fine dust. It then slipped away from his fingers and what was left in its place was a black USB.

“...”

Lu Zhou stared at the USB in his palm and did not speak for a long time.

He was still shocked by what he just saw.

I guess this system has a lot more secrets that I know nothing about.

The USB in his hand was probably made of some special material, and that would disintegrate after he copied the data.

Like the USB containing Xiao Ai...