

Scholar 161

Chapter 161

"You're asking me why?" said Kerella. She crossed her arms and said, "I don't think there's any explanation for using the Yukawa potential function. If you can't even understand this, I suggest you go back to studying quantum chromodynamics textbooks."

The audience laughed.

Some were friendly laughter, some were not.

Of course, some people did not laugh as they were thinking carefully.

For example, Yan Xinjue and Professor Lu as well as the acceptance people sitting in the front row...

Professor Brunos felt something was wrong.

When he flipped to the fourth page of the thesis, he frowned and started to check it out seriously.

Lu Zhou smiled as well.

Academic exchanges were not for the sake of embarrassment.

Yeah, there was no reason to worry about anything else.

Lu Zhou opened his mouth and continued to ask, "As you said, the Yukawa potential function is a basic operation. However, the Λ^* value you calculated on line 14 of the fifth page is 0.713. Based on this number, you deduced there are two resonance states between the 1.05-1.06 GeV energy zone..."

Lu Zhou took a deep breath and recomposed himself before he continued to speak, "Although our team didn't analyze this, I just did some calculations and the Λ^* is 0.621. I think you made a mistake on line 11, fifth page. You used a wrong coupling constant formula."

The venue suddenly became quiet.

Then, there was chatter.

Also...

Amazement.

They were surprised at his speed of calculation, and his sensitivity toward numbers.

Whether or not he was right, being able to complete this task on the spot was no easy feat!

“Lu Zhou?”

As Luo Wenxuan sat in the corner of the venue, his eyes widened.

What a coincidence?

He did not expect to bump into Lu Zhou.

Then again, when he was at Princeton, he remembered hearing that Lu Zhou wanted to develop in the direction of mathematical physics.

Unexpectedly, the two of them reunited at CERN.

Destiny was really something that was unclear.

“You know him?”

The old Jewish man with glasses asked him.

Luo Wenxuan replied, "He's a friend from school." He smiled and said casually, "Speaking of which, he was awarded the Best Young Speaker at the Princeton mathematics conference. You were in California, so you missed it."

The old man was interested. He nodded and said, "No wonder Deligne had such a high praise of him. This young man is interesting."

The audience was whispering.

On the stage, Kerella was blushing.

Just a second ago, she was telling Lu Zhou to go study textbooks, but now she was defeated.

However, she quickly came up with a response.

"This is just a small mistake," said Kerella. She picked up a pen and made a question mark next to the 0.621 number on the thesis before she cleared her throat and said, "Thanks for pointing this out, we'll change it. This shouldn't affect the conclusion of our thesis. Any other questions?"

Yes, this was only a small mistake.

Everyone made mistakes. It was within the rules to make small adjustments.

However, was it really just a small mistake?

Lu Zhou smiled and said mischievously, "You're welcome. Also remember to change the Dalitz graph, especially between 1.05-1.06 GeV, and try not to be careless this time."

Kerella started to sweat.

WTF?

Change the Dalitz graph?

Calculations was easy to adjust, that was no problem.

But the graph...

Her heart was broken when she thought of the complicated graph.

Kerella looked at her professor for help.

Professor Brunos had a complicated expression on his face as he clenched his fist.

I was careless...

Kerella clenched her teeth and placed her fists on the podium as she said, "This is not important. I can guarantee that there are no other problems!"

Lu Zhou shook his head, "No, this is very important. Maybe there is an unprecedented particle between 1.05-1.06 GeV? Who knows? Everything is possible. Physics is a rigorous subject. We all know that the pentaquark exists, but we need additional evidence. What's the use of incorrect results?"

Thus, a discussion began in the venue.

The LHCb acceptance person sitting in the front row nodded. His face was full of approval.

Yes, physics was a rigorous discipline.

Everyone knew that this experiment was to further prove the “standard model”, but people still gathered here from all over the world to witness this great moment.

What was all this for?

To further prove the “99.99%” guess.

Kerella’s face turned red as she bit her lip and stared straight at Lu Zhou.

Lu Zhou suspected that if she had a gun right now, she would shoot him.

It was not only Kerella, but a few other people from the University of Syracuse were also staring at him.

Therefore, Lu Zhou looked at the two acceptance judges instead.

A slightly older acceptance judge stood up and said, “His point of view is correct. We cannot accept a report with obvious errors. Thank you for your work, but unfortunately, I must point out that your report needs improvements.”

“This is an exciting presentation, and we look forward to the next one. Thank you.”

The presentation ended.

Applause was heard in the venue.

However, Kerella felt like the applause was not dedicated to her.

They did not pass their acceptance check, so the next one would be three days later.

Even though they took the lead, they dropped the ball and lost the “race”...

The applause came to an end and the audience began exiting the venue.

The researchers from the University of Syracuse were dissatisfied.

While the audience were leaving the venue, Professor Lu Shenjian stood up and patted Lu Zhou’s shoulder. He laughed and said, “Nicely done.”

He then leisurely walked away with his old friend Brunos.

Lu Zhou looked at Professor Lu’s retreating back and smiled.

He could tell that the old man was in a good mood and he himself could not help but feel satisfied.

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Just as he had packed up his stuff and was about to leave the venue, suddenly someone called his name.

“Lu Zhou!”

When he turned around, he was shocked.

“Luo Wenxuan?”

Luo Wenxuan hugged Lu Zhou and smiled as he said, “What a coincidence, you’re here too. What a small world.”

“Yeah, small world... This is?”

Lu Zhou looked at the old man standing next to Luo Wenxuan. He thought that the old man looked familiar.

Luo Wenxuan smiled and said, "Let me introduce to you, this is my supervisor..."

The old man interrupted Luo Wenxuan and said, "Edward Witten."

He extended his right arm and smiled.

Edward Witten!

Lu Zhou was shocked when he heard this name.

He knew that Luo Wenxuan was doing mathematical physics, but he did not know that Luo Wenxuan had this big name as a supervisor!

How nutty was this guy?

During the '80s, knot theory was the craze, and many invariants were invented. One of the more famous ones was the Jones Polynomial.

When the mathematicians were still busy figuring out this new concept, Witten jumped out and told everyone that there were 3-stream types and sometimes different multiplications could construct Jones polynomial invariants...

He made the problem simple, but that was not just it.

He also immediately gave a set of topological methods of shearing flow which shocked the entire world.

The same thing happened in string theory.

Since the 1960s, string theory had been popular in the field of theoretical physics. Everyone dreamed of completing Einstein's dream, so a lot of different versions of "superstring theory" emerged.

Then in the 1990s, Witten appeared again, offering the legendary M theory. He proved that many different versions of the superstring theory were actually different limits of his "M theory"...

In a sense, this person was like Lu Zhou.

When Lu Zhou defeated the twin prime conjecture, he shocked the academicians of the world.

However, even though Mr. Witten was a physicist, he received a Fields Medal.

After all, modern theoretical physicists were still struggling to test the standard model. Even the three-dimensional world had not been fully understood. A one-dimensional string was a mystery.

He would have to wait for hundreds of years for his theory to be proven. Only then, could he received the Nobel prize.

Lu Zhou shook Witten's hand and said, "Nice to meet you!"

Witten smiled and said, "Nice to meet you too. My friends have told me about your presentation at Princeton. Unfortunately, I missed it."

The two started to chat, and the conversation quickly got technical.

"You're interested in mathematical physics?"

Lu Zhou nodded and said, "Yeah, I am. Theoretical physics is fascinating."

Witten took out a business card and said, "It seems that we have common interests. If you're interested in researching at Princeton, you can consider becoming my PhD student."

Lu Zhou took the business card from the old man and said politely, "I'll take your offer into consideration."

Although Lu Zhou still wanted to talk with Witten for a bit, Witten had something to do so he left early.

Luo Wenxuan became more relaxed. He patted Lu Zhou's shoulder and said, "Let's go drinking tonight?"

Lu Zhou replied, "I can't go tonight. I still have some data to process. Maybe some other day? I'll buy you drinks."

Alcohol would distract his attention and at the moment, Lu Zhou needed a clear mind.

Luo Wenxuan patted Lu Zhou on the shoulder and said, "Okay then, I'll wait to drink with you!" He then left.

When Lu Zhou looked back into the venue, he saw that Professor Lu Shenjian and Yan Xinjue were gone.

Those two probably went back to the hotel. He then turned around and walked to the stairs.

Just as he was about to leave the building, suddenly, Lu Zhou noticed that the female presenter was standing at the exit. Her arms were crossed and she had a weird vibe.

Lu Zhou was not good at recognizing a foreigner's face.

However, this time, he instantly recognized her.

He pretended like he did not see her and quietly walked to the other side of the corridor.

He was scared.

He had already experienced the enthusiasm of foreigners at Princeton and he did not want to try again.

The reason was simple.

For a handsome guy like him, there could only be one reason for a woman waiting for him.

However, he could not escape so easily.

When he turned around, he heard footsteps.

Lu Zhou tried to walk faster, but she was already in front of him and she was blocking his way.

She's so fast!

He prepared himself mentally as he did not know what to expect.

They were quiet for a while.

Lu Zhou looked at Kerella and asked quietly, "Excuse me, is there anything I can help you?"

With her arms crossed, Kerella stared at Lu Zhou and asked, "Is it fun to embarrass a girl on stage?"

Lu Zhou was stunned for a second. He then stared at her and asked, "I'm only pointing out your mistake. What has it got to do with your gender?"

Is this it?

I thought she was going to do something else.

As Kerella looked at Lu Zhou's careless attitude, she did not know what to do.

She took a deep breath as she stared at Lu Zhou. She then said, "Your presentation is the day after tomorrow, right? I'm looking forward to it."

Lu Zhou smiled and said, "Good, I don't know what you're looking forward to though. But I think I'll live up to your expectations."

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I guess, he has some guts.

The PowerPoint presentation began.

Lu Zhou did not notice Kerella. Instead, he simply grabbed the microphone and began to speak.

He spoke for thirty minutes.

The last 15 minutes was the questioning session.

Lu Zhou looked at the audience and asked, "The basic situation is like this. The data of B1 is normal and the Dalitz diagram is on the PowerPoint. Are there any questions?"

The venue was quiet.

Not a single person raised their hand.

Actually, some people wanted to ask questions, but they did not know what to ask.

Lu Zhou thought that the University of Syracuse's research team would give him trouble, but they did not do anything.

However, he knew why.

After all, this kind of data processing did not require any innovative methods, so everyone knew the conclusion. There were no problems with the B1 data, and the pentaquark existed...

Therefore, it was impossible to pick a mistake from the presentation.

They could only nitpick the data calculations.

Therefore, he deliberately spent the whole of yesterday to double check the work with Yan Xinjue. They did not find any problems.

Lu Zhou was certain that there were no mistakes.

...

After a five minute wait, no one raised their hand.

The acceptance judge from LHCb walked to the podium and made a brief summary of the presentation. He thanked the researchers and announced the acceptance.

This thesis would be included in the archives of the LHCb research.

After the presentation, the people in the venue began to exit.

Only one person sat still in their seat.

"This is impossible..."

Kerella stared at the thesis and she had a look of disbelief on her face.

The questioning session had long since ended.

The LHCb already announced the acceptance.

However, she could not believe that not a single mistake was found.

“Something must be wrong, we just didn’t find it yet...” murmured Kerella as she stared at the data on the A4 paper. She used her computer to double check the answers.

However, she could not find any mistakes.

Not only did she not find any mistakes, she could not help but admire the logic used in her opponent’s thesis.

This was a researcher’s subconscious reaction to a beautifully written thesis.

This thesis was meticulous.

She continued to sit there until a researcher from her team walked over.

“Forget about it, Kerella. I know how you feel, but if you want to find a calculation mistake from him, it’ll be impossible.”

His name was Nelson, and like her, he was also a PhD student under Professor Brunos. His research direction was mathematical physics, and he did the calculations together with Kerella.

Even though Kerella knew that she could not change the past, she was still distraught about her last few months of hard work.

She looked at the thesis and asked, "Why?"

Nelson sighed and said, "Look at who that intern is."

Kerella asked nonchalantly, "An Asian, so what?"

Nelson shook his head, "No, I know he's an Asian. His name is Lu Zhou. Does that sound familiar?"

Kerella frowned and said, "Familiar?"

"Okay, it seems that you don't pay attention to the field of mathematics," said Nelson. He shrugged and continued, "At the beginning of the year, he proved the twin prime conjecture. Many people said that he could win the Cole Prize's number theory award this year. He might also win the 2018 Fields Medal... Your opponent is a potential Fields Medal winner. Do you think we've got a chance?"

If this was another research project, such as spectrum analysis, Nelson would not give this intern so much respect.

However, for this kind of data analysis...

They had no chance of winning.

After all, he knew Lu Zhou was the freaky genius from Princeton.

Nelson saw that Kerella did not speak, so he tried to comfort her.

"It actually doesn't matter if we win or lose. You'll realize that there are many geniuses in this world. Do you want to go drinking?"

“... I can’t accept this.”

“You’re crazy.”

Nelson shook his head and walked away.

...

Hellfire bar...

Heavy metal music blasted Lu Zhou’s eardrums while the colorful lights pierced his eyes.

If Lu Zhou knew it was so loud in here, he would not have come. He wanted to relax, but this made him even more tired.

However, since he was already here, he could not just leave.

After all, he said he would buy Luo Wenxuan drinks.

As thanks.

“Two glasses of Gibson, thanks.”

Luo Wenxuan skillfully ordered the bartender before he started to chat with Lu Zhou.

He had been here longer than Lu Zhou, so he was familiar with everything around here.

“... CERN is like a university. It has everything that a university would have.”

Lu Zhou glanced at the bartender pouring the drinks and asked, "For example?"

Luo Wenxuan smiled and said, "For example, like various clubs, and two bands. Last time I missed their performance here, but I won't miss it this time."

"Why?"

"Because they'll do a show on the night of the experiment completion."

The bartender placed two glasses of Gibson on the table.

Lu Zhou looked at the colorless liquid before he picked up the glass with a puzzled look.

What's this?

He took a sip.

Then...

He choked.

"Cough!"

When Lu Zhou placed the glass on the table, he was still coughing.

F*ck sake!

What's this sh*t?

He wanted to say that sitting here made him more tired.

Luo Wenxuan shook his head. With a smile, he said, "Your life is lacking in passion. It's just like when I first arrived in America. I can see myself in you."

"I think I'm going fine..."

Due to the loud music, Luo Wenxuan did not hear Lu Zhou and he continued to speak slowly, "You need some adjustments in your life. You should relax your brain so that you can concentrate more when you work. Excessive pressure will become problematic... Besides, we should pursue more than just mathematical physics."

Lu Zhou disagreed, and he asked, "Like what?"

Luo Wenxuan smiled and said, "Like beautiful woman."

"What...?"

Lu Zhou was so stunned that he did not know what else to say.

"As your friend, it pains me to see you like this. Therefore, I've decided to teach you some life experience."

Lu Zhou asked, "So, does that mean that you have a girlfriend?"

Luo Wenxuan: "Nope."

Lu Zhou: "..."

Then, why should I take your advice?

Luo Wenxuan coughed and said, "I've dated three girls when I was in America, but they were all short-term... But that's not important, the important thing is that I can give you some knowledge."

Lu Zhou asked suspiciously, "Knowledge?"

"Yes, knowledge. This is also why I brought you here today," said Luo Wenxuan with a smile. He cleared his throat and continued, "There are two important things when it comes to picking up a woman. One is to maintain eye contact, the other is to be confident. You have to show that you can maintain a good conversation."

Lu Zhou asked, "And?"

"You might not know it, so let me give you an example. So... She will do. Watch me," said Luo Wenxuan as he looked around. When he found a girl with big boobs, he took his glass and walked over.

"Hey beautiful, can I sit here?"

Luo Wenxuan had a charismatic smile but the girl ignored him.

He did not give up. Instead, he asked with a smile.

"What do you want to drink?"

"Nothing, thanks."

"..."

The conversation ended.

It was slightly awkward.

Lu Zhou looked at the band on stage and pretended like he did not see anything.

After a while, Luo Wenxuan came back with his glass.

“Fine, she’s probably in a bad mood. Let’s change our target,” said Luo Wenxuan as he coughed awkwardly and looked around. He then found an easier target.

Lu Zhou sighed.

This is why you’re single.

Lu Zhou was about to comfort his friend when suddenly, a napkin was slammed on the table.

A girl walked over and sat next to Lu Zhou.

“Two Gibson, one for him.”

“Okay.”

The bartender skillfully collected the money before he started to make the drinks.

Lu Zhou was stunned as he looked at the lady.

He recognized her face.

She was none other than Kerella.

Lu Zhou had not expected to see her here.

Kerella looked at Lu Zhou and asked, "You don't want to say anything?"

Say what?

What's there to say?

Lu Zhou spoke with an uncertain tone, "Thanks for giving us the win?"

Kerella nearly spit her drink out.

She felt like her opponent did not even respect her.

She had finally calmed herself down but Lu Zhou made her furious again with one sentence.

The two glasses of Gibson were placed on the bar.

The bartender made a gesture and walked aside.

Kerella took a deep breath and suppressed her anger. She then looked at Lu Zhou and said, "Yes, I gave you the win. Shouldn't you buy me some drinks in return?"

Lu Zhou looked at the two cups of cocktails and asked, "Sure, but this is a bit intense. Should we switch to something else?"

He was not scared of getting drunk, but this thing tasted horrible.

Kerella lifted her eyebrows and asked, "You're scared?"

Lu Zhou was speechless.

You really want to have a drink off?

Lu Zhou inherited his father's genes, so his alcohol stamina was high.

He never passed out when he went drinking with his friends from Dorm 201.

"Of course not," said Lu Zhou. He raised the glass, "Cheers?"

"Cheers!"

Kerella downed the glass and when she looked at Lu Zhou, she saw that Lu Zhou also downed it.

She looked at the bartender and placed some cash on the bar before she said, "Two more."

Lu Zhou looked at the crazy woman in disbelief.

What a joke.

He was not scared of drinking at all, and he was confident in his alcohol tolerance.

He would never lose to some foreign chick.

When Kerella saw that Lu Zhou was unfazed, her anger did not die down at all. Instead, she became even more furious.

She was not about to lose to this guy. She wanted him to get a taste of his own medicine...

They kept drinking.

Luo Wenxuan sat aside as he stared at these two in disbelief. He wanted to discourage them but could not do it.

When he saw the row of empty glasses on the counter, he gulped.

Using this stuff as shots.

These guys are crazy.

Chapter 164

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Chapter 165: Talk By Mr. Witten

The battle lasted for more than 20 minutes.

Lu Zhou admitted that his opponent was very strong.

However, he was stronger.

“Bartender, give me another... No, two more...”

Her face was red as she reached for the cash in her bag. She could not even speak clearly.

Lu Zhou was in a better state, but he was still struggling to stay awake.

Box..

“Two glasses of water.”

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“F*ck off, I can still drink.”

Lu Zhou quietly said, “Just give us the water.”

It was obvious who won, so there was no point for them to drink more.

“Okay.”

The bartender poured two glasses of ice water and gave them to Lu Zhou.

“Two glasses of ice water.”

“Thank you.”

Lu Zhou nonchalantly placed the glass of water in front of the crazy woman and said, “Cheers.”

Kerella’s eyes were wide opened as she reached out and grabbed the cup. She saw that her opponent had already finished drinking so she downed the water as well.

As a result, she nearly choked and almost started to tear up.

Kerella slammed the empty cup on the table and coughed. She then took a drunken look at Lu Zhou.

“This isn’t alcohol. You’re lying?”

“This is alcohol. Maybe you’re too drunk?... Two more glasses of water, please.”

Lu Zhou suddenly heard a “slam” sound. He saw Kerella collapsing on the table.

If her shoulder was not moving, he might have called an ambulance.

“More water?” asked the bartender calmly.

“It’s fine...”

Lu Zhou felt his head spinning.

On the one hand, he was drunk. On the other hand, he did not know where this girl was staying.

He could not just leave her like this. If something happened, it would be his fault.

He thought for a long time and could not come up with a good plan. Lu Zhou suddenly remembered that Luo Wenxuan was nearby, so he went to him for advice.

“... What do you do in a situation like this?”

Luo Wenxuan looked at Lu Zhou and replied, “There are rooms upstairs...”

Lu Zhou placed two notes on the bar and took the room key from the bartender's hand. He then looked at Luo Wenxuan and pleaded, "Help me."

Luo Wenxuan did not move.

After a while, he suddenly sighed and said, "There's not much else I can teach you."

He patted Lu Zhou's shoulder and gave a hint of encouragement.

"You got this!"

Luo Wenxuan then turned around and disappeared in the crowd.

Lu Zhou: ? ? ?

...

Lu Zhou sat next to her for a while, but it did not look like she was going to wake up.

It could be tomorrow until she woke up.

Lu Zhou looked at the crazy woman. In the end, he finally carried her upstairs and into the room.

By the time he arrived, he had to sit down in a chair. He was panting and sweating his ass off.

Motherf*cker, this girl is way harder to deal with than Liu Rui.

It was not just a weight problem. When Liu Rui was drunk, he could still kind of walk around. When this girl was drunk, she was dead weight.

Lu Zhou looked at Kerella who was passed out on the bed and he made up his mind.

He would never drink with people who could not handle their alcohol anymore.

After Lu Zhou rested for a while, he finally felt a little better.

The sweat woke him up.

He saw the dark night outside the window. It was getting late, so he got up and closed the curtains.

After that, he placed the key on the desk and walked out the door.

...

The next day, a ray of sunshine pierced through Lu Zhou's window. He rubbed his eyes as he climbed out of bed.

Yesterday, after he went back to his hotel, he fell asleep straight away. Thus, he was still wearing clothes from yesterday.

Lu Zhou went and took a shower. He still had a slight headache. As he stared in the mirror, he nodded with satisfaction.

Not bad.

I feel a lot better.

Maybe it was because of the metabolism drug that the system had previously give him, his hangover was not that bad. Lu Zhou went down to the cafeteria and ate some breakfast. He then followed the itinerary and walked to the nearby lecture.

Since the report was already accepted, Professor Lu's research team would not have any new tasks for the month.

Therefore, Lu Zhou felt very relaxed. He did not have much to do.

However, he still did not take a break.

World-class theoretical physics and mathematics professors were gathered here.

Lu Zhou took this opportunity to listen to the lectures by potential Fields Medal and Nobel Prize winners.

Once Lu Zhou planned his timetable, he could not wait to fill in his lecture spots.

The first lecture in his timetable was by Luo Wenxuan's boss, Edward Witten.

Judging from the topic of his lecture, it was probably going to be about Morse theory and differential summation in pure numbers.

Lu Zhou was impressed by the old man's public speaking skills. The old man skillfully articulated complex theories in clear and simple language.

The old man also promoted his own M theory and made some bold predictions about theoretical physics.

Even though the old man was still full of energy as he continued to talk, the energy of the audience slowly died down.

After the talk, Lu Zhou packed up his stuff and left the venue. He then walked to the cafeteria.

While he was getting his food, he bumped into Kerella.

Lu Zhou was about to say hi to her, but the female PhD rudely said, “F*ck you”, before she walked away with her food.

Lu Zhou was confused. He did not know what this woman wanted.

F*ck you!

I shouldn’t have taken care of her yesterday.

Chapter 166

Almost half of the world’s famous physicists were sitting in this conference room.

Fortunately, Lu Zhou, as an intern, was able to attend this meeting.

Sadly, he did not get a chance to speak. He merely sat next to Professor Lu Shenjian and listened to the meeting.

In the final part of the meeting, physicists from various laboratories made recommendations to the experiment, and even Evans responded on behalf of LHCb.

Of course, it was not just physicists who were present. Various media outlets were also concerned about this experiment. They then had a ten-minute interview after the meeting was over. This was a ritual for CERN meetings.

These interviews were always interesting...

For example, a British reporter stood up.

“... Hello, Mr. Evans. When we interviewed Otto Rosler, a retired professor of chemistry at the University of Munich, Mr. Rosler expressed concerns about the collider experiment. He said that the ongoing experiment at CERN could lead to the formation of a quasar inside the earth... such as a black hole. Can you give a reasonable explanation to this?”

Mr. Evans was used to answering difficult questions, so he replied skillfully.

“We’ve already informed Mr. Rosler on his mistakes. Of course, we also understand that people like him won’t listen to us. Thousands of researchers have worked hard on this experiment, so we know what we’re doing, unlike this guy. Next question.”

Another reporter stood up.

“Can the theory generated by the Hadron Collider experiment be used as a theoretical basis for a time machine?”

Lynn Evans, “Our job is to test the correctness of the standard model and study the basic particles that make up the universe. We don’t have plans to study time machines. I’ve said countless times that this topic was handed over to CERN. Next question.”

“ ... ”

Lu Zhou listened to those weak questions and was impressed by Mr. Evans’ reply. If it was him, he would not have this much patience with the reporters.

Professor Lu Shenjian nodded and he said to Yan Xinjue and Lu Zhou.

“After today, we might get a little busy. Make sure you guys adjust your schedule.”

Yan Xinjue nodded and said, “Ok, professor.”

Lu Zhou asked excitedly, “Do we have a task to do?”

Professor Lu Shenjian nodded, “Of course, we’re not here to screw around.”

He did not elaborate on the specific tasks, but Lu Zhou was not in a hurry. Lu Zhou knew that he would eventually inform him.

...

After the meeting, the Hadron Collider experiment entered the final preparation stage.

It was not just CERN physicists who were nervously involved in the preparation of the experiment, even special forces from Switzerland and France entered the nearby town.

This type of martial law situation started three days ago.

Soldiers were temporarily stationed at the entrance to the town, and every vehicle was checked prior to entry.

As for the entry and exit points of the LHCb, they had been temporarily blocked. Unauthorized personnel was not allowed to enter.

The experiment was about to begin.

Yan Xinjue borrowed a car and took Lu Zhou to CERN’s northern district.

It was worth mentioning that the researchers did not have to enter the Hadron Collider themselves. Professional staff members would take the elevators and check if the Collider was running normally. After that, researchers located in tens of kilometers away would operate the machine and collect the data in the CERN headquarters.

Yan Xijue said that it would be a shame not to see the scene himself. Therefore, he agreed to take Lu Zhou there.

When they arrived at the northern district, they were stopped by two soldiers. Once the soldiers examined their identifications, they allowed them to pass through.

Sitting in the car, Lu Zhou looked back at the soldier checkpoint before he asked, "Are they here to protect the collider?"

Yan Xijue replied while he continued to drive, "Actually, they're not protecting the collider. They're protecting the citizens of the two countries."

"What...?"

Yan Xijue shrugged, "Every year, people say that the LHC might cause a black hole and destroy Europe. There are protests against the LHC every year. Therefore, France sent their soldiers here to control the situation..."

Lu Zhou could not help but ask, "There are people that actually believe that?"

"CERN always seeks out trouble, and they always answer press conferences in an unreliable manner. Therefore, the media spreads false information about them. Around 2007, CERN's spokesperson jokes that the LHC could create a black hole... I guess he wanted to show off how advanced the LHC was, but the media twisted his words."

"Then?"

Yan Xijue smiled and said, "Then the media blew up. Now, every year there are people protesting against the LHC. Even some environmental agencies have intervened. Some protesters even tried to sneak in through the tunnels. CERN had to hire firefighters to rescue them out."

Lu Zhou secretly snarled.

Sneaking into the LHC, how dare they. Do they not want to live?

There had only been one person hit by the particle beam of the collider. His life eventually became as miserable as the soldiers from Chernobyl.

The high-intensity radiation and oxygen deficiency from the helium was deadly.

In a sense, this was why Lu Zhou did not choose Mission 3 to create history.

Chapter 167

Yan Xinjue parked the car in the garage and took Lu Zhou to the main entrance of the research center.

...

A Hadron Collider could be split into two parts. One was the small pipes wrapped in bismuth metal, and the other was a variety of detectors buried in large pipes outside the small pipes.

The two near parallel orbits intersected at a certain point in a flat “X” shape while accelerating in different directions, and the two beam currents collided at this intersection.

There were about four “reaction points” like this, and around these reaction points, various detectors were connected to collect the physical phenomena that occurred when the particle beam collided.

Of course, not all the particles could collide, and the particles that did collide might not necessarily coincide with each other to destroy the strong interaction forces inside.

So the whole collider was based on the principle of stuffing more particles into a limited number of pipes while accumulating collisions with small probability in long data accumulation.

The Higgs particle that shocked the physics community was discovered in this manner.

The research center that Yan Xinjue took Lu Zhou to was responsible for observing and collecting the collision data. There were many laboratories inside the center, each responsible for collecting data at different detectors.

They walked into one of the labs and saw a white man with a lab coat on. He was drinking coffee in front of the computer.

Yan Xinjue walked over and introduced him to Lu Zhou.

“This is Professor Grayer. You have probably seen his name many times in CERN theses. During my internship here, he was already working here.”

“Don’t describe me as so old, I only started working here since 2008,” said Professor Grayer with a smile. He reached out his hand and said to Lu Zhou, “Nice to meet you, Mr. Lu.”

Lu Zhou shook his hand and said, “Hello, hello.”

Originally Lu Zhou thought that Professor Grayer would be at Professor Lu Shenjian’s age, but Professor Grayer only looked around forty years old.

Professor Grayer released his hand and said, “I’m sorry I can’t take you on a tour as the experiment is about to begin. I have to stare at this computer. If you were here two weeks ago, I could still take you down for a tour, but not now since the entrances have been blocked.”

Lu Zhou smiled and said, “Don’t be sorry, we’re standing at the front row of history.”

“Haha, you must be new here,” said Professor Grayer with a smile. He continued, “There are thousands of researchers working on this project. Their names are organized alphabetically on the thesis.”

Thousands of people on a thesis, and organized alphabetically...

Emm...

That does sound de-motivating.

Lu Zhou suddenly noticed the images on the computer screen moving and he asked, "Has the experiment began?"

Professor Grayer smiled and said, "Not yet. Right now we're in the trial stage. We have to ensure that the channels are clear, and the detectors are running normally. So before we start looking for pentaquarks, we have to do a few trials. Right now on the ATLAS, you are seeing a photo pair."

When Lu Zhou looked at the images on the computer screen, he was confused.

He was sensitive to numbers, but he always felt like he was lacking in images.

However, after staring at the image for a while, he felt a sense of familiarity.

Lu Zhou could not help but ask curiously.

"Why do I feel like I've seen this image somewhere?"

"Because we did the data from B1 partition, and this partition was collected by Professor Grayer," replied Yan Xinjue.

"Oh, speaking of which, I heard you guys destroyed Brunos?" asked Professor Grayer as he laughed.

"Indeed we did," replied Yan Xinjue mischievously.

Professor Grayer smiled and said, "Hahaha... When I saw him last time, he didn't look too good. It must be because of this."

It seemed that Professor Brunos was not that popular with his peers as neither Professor Lu Shenjian or Professor Grayer liked him.

They chatted for a while before they quickly reverted back to the experiment.

Professor Grayer heard that Lu Zhou was interested in his lab, so he patted the computer and spoke in a clear manner.

“CERN is not only the world’s largest Hadron Collider, but we also have the world’s most advanced computer system. The LCG. To compute our experiment, this thing lets us control hundreds of thousands of computers around the world. The ATLAS computer is used to summarize the data and is mainly responsible for collecting data from detectors...”

“... From this computer, you can see the trajectory of the collision of the proton. Of course, this is only a model, but the real scenario isn’t much different.”

Professor Grayer added another line.

“If you’re interested in particle physics, you can come to me. I need an assistant that is good at mathematics. Working at CERN will also give you...”

Yan Xinjue interrupted him, “Don’t listen to him. He’s worked here for decades and published hundreds of theses but he still hasn’t received the first author. Who cares if your name is on a thesis with thousands of other names on it...”

Professor Grayer looked at Yan Xinjue with dissatisfaction.

However, Yan Xinjue merely shrugged and said nonchalantly, “Sorry to expose you, but I can’t let you fool my friend.”

Professor Grayer said stubbornly, “What do you mean by fooling? I’m just making a suggestion!”

It was obvious that these two had a close relationship.

It was probably because Yan Xinjue had worked here previously.

After that, the dialogue between the two became boring, so Lu Zhou stopped listening.

Lu Zhou's attention was on the data on the computer screen.

Suddenly, Lu Zhou saw an energy zone on the map and frowned.

When Yan Xinjue noticed Lu Zhou's expression, he asked, "What?"

Lu Zhou pointed to the computer screen.

"Don't you think that the data in this energy zone looks a bit... weird?"

Chapter 168

Professor Grayer was just showing off.

He was almost bragging.

It did make sense. All of the world's top theoretical physicists were gathered here. CERN wanted to show off their equipment.

How else would they let the world know how nutty their machine was?

The LHC could even reach 14TeV of collision energy, which meant that each particle would carry 7TeV of energy.

How scary was that?

The energy unit was used to describe the mass of a particle. For example, the mass of a hydrogen atom was about 1GeV, the Higgs particle found in 2012 was about 125 GeV.

The Shangzheng electron-positron collider is about 5GeV, magnitudes lower than the LHC.

It would take decades for China to catch up.

“... I don’t mean that the experiment range is strange,” said Lu Zhou. He poked at the computer screen and asked, “Did you not notice? There’s an unusual impact near the 750GeV range.”

“This isn’t a sign of a collision. It’s just a single two-photon signal. But it is strange how it appeared in the 750GeV zone,” murmured Professor Grayer. He rubbed his chin and continued, “But this isn’t uncommon. We always observe some special signals on ATLAS, so the data could just be a random error.”

Lu Zhou was still staring at the screen, he could not help but ask, “So this is common?”

Yan Xinjue nodded, “Yeah, it is. The signals generated by the collision are only 1% of the data. Therefore we usually guess the conclusion and verify it with experiments. You’ll get used to it.”

Particle physics was a very metaphysical thing.

Normally, atoms could not be “directly observed”. So in order to determine the existence of a particle, confidence was needed.

This was a statistical concept.

In particle physics, three standard deviations away from the mean was a “sign”, whereas five standard deviations was a “discovery”. Although the media often wrote “breakthrough progress” or “significant discovery”, most of them were only “signs”.

Therefore, they would need three-sigma to be a sign.

A temporary characteristic peak did not mean anything.

Particles could only be confirmed by repeating experiments and observing the particle on different detectors. When the confidence of the particle was above five standard deviations, it could be counted as a “discovery”.

Lu Zhou did not say anything else.

Soon after, the experiment continued.

A series of green dots appeared densely on the image with most of them concentrated around the 125GeV range.

However, Lu Zhou’s attention was still concentrated on the 750GeV zone.

Suddenly, another point jump appeared on the 750GeV zone.

Lu Zhou’s heart dropped. He then looked at Professor Grayer and asked, “What about the data on the CMS detector?”

There were many detectors in one orbit with ATLAS and CMS being the most sensitive.

There was a simple way to test if Lu Zhou’s observation was just simply an illusion. He would be correct if the observation was observed by both detectors at the same time.

When Professor Grayer heard Lu Zhou’s question, he had a weird expression.

“The data collected by the CMS is responsible for the lab upstairs. If you’re curious, wait a bit and I can take you there.”

Lu Zhou asked immediately, "Then will the test run impact data be recorded?"

Professor Grayer nodded and said, "Normally it would be archived. There isn't much research value but I can give you a copy. It's not classified information anyway. But let me remind you that since this isn't public data, you can't use this in a thesis."

Yan Xijue asked curiously, "What did you find out?"

Lu Zhou thought and insisted on his own point of view. He said, "I think there's something wrong with the 750GeV energy zone. From a statistical point of view, this could be described as random, but it feels far-fetched."

Yan Xijue asked jokingly, "Like from a mathematician's perspective?"

Lu Zhou, "You could say so."

Yan Xijue sighed and said, "I know your research direction is mathematical physics but I have to remind you that even though mathematics is an important physics tool, not all physical phenomenon follows mathematical laws. 750GeV is way too large, the Higgs boson is only 125GeV. I think it's just two-photon, the signal might not even be a collision."

Yan Xijue patted Lu Zhou's shoulder and continued, "Don't get caught up in the energy zone beyond 10GeV. We're looking for the pentaquark particle. If you're really OCD, rest assured, you won't see any activity in the 750GeV energy zone again."

Chapter 169

Even though everyone was expecting this, people were still excited.

Generally speaking, the quark divided in the collider was either a "quark-antiquark" pair similar to K meson and π meson or a "three quark state" composed of protons and neutrons. As for the single quark state, since the quark was bound by the strong force of the color charge, the single quark state particle was not allowed to exist.

However, quantum chromodynamics did not prohibit the existence of singular states such as “tetraquark” and “pentaquark”.

Over the years, major particle physics laboratories had been searching for those “singular states”.

If these guys were not found, it might prove a loophole in the standard model. Thus, quantum chromodynamics might not be correct.

However, once these singular states were discovered, the entire theoretical physics community would be in great relief!

After the second day of the experiment, CERN invited reporters and held a high-profile press conference.

In front of the media reporters, CERN’s spokesperson announced the news in an excited tone.

“... We have succeeded in discovering the pentaquark particle. This is another great victory for the standard model!”

Unsurprisingly, the discovery of the pentaquark would be the most significant pentaquark research result of the year.

The CERN conference ended in the midst of the applause. This was followed by numerous articles on the research discovery.

However, for the physicist, the real work had only just begun.

In order to better reveal the physical properties of the pentaquark particles, the LHCb International Cooperation Group assigned tasks to researchers in various countries to perform a full-spectrum analysis on the newly discovered particles.

Professor Lu Shenjian was also involved in this work.

However, this task was not as time intensive as the B1 data calculations.

Later, Lu Zhou heard from Yan Xijue that this task was different than the others. Every “full spectrum analysis” paper would be signed by all of the researchers.

Too many co-authors would weaken the content of the thesis.

Lu Zhou sat in the hotel’s conference room and chatted with Yan Xijue while he wrote on an A4 paper.

“Thousands of signatures... My name won’t even be seen. This is so de-motivating.”

“That’s how it is working for CERN. That’s why I don’t recommend you to work here. Not even one can win a Nobel Prize...” said Yan Xijue. He yawned and placed the pen down before asking, “Do do you want to play billiards tonight?”

Lu Zhou thought before shaking his head, “No thanks, I’m good. I still have to go to Professor Grayer’s office.”

Last time after the experiment, Professor Grayer promised that he would take the time to help Lu Zhou sort out the experiment data.

Just now, Lu Zhou received an email from Professor Grayer, saying that the data had been sorted out and to go to his office with a USB.

It would not take that long to copy the data, but Lu Zhou wanted to analyze the data on the same night.

After all, he had to help with Professor Lu’s project during the day. He was only free during weekends and evenings.

Yan Xijue knew what Lu Zhou was going to do and he said, “Don’t tell me it’s about that thing.”

Lu Zhou, "You guessed it."

Yan Xinjue had a defeated look as he sighed and said, "Fine, I admire your commitment but you do know that you're doing useless work, right?"

Lu Zhou smiled and asked, "How do you know it is useless without doing the work?"

Lu Zhou was like this. He was stubborn in both mathematics and physics.

At the moment, he was very interested in the 750 GeV characteristic peak.

Although Yan Xinjue and Professor Grayer both conveyed that the peak was probably nothing more than a two-photon signal and it would be ridiculous for a particle to carry that amount of energy, Lu Zhou disagreed.

750 GeV did seem a little heavy, but it was still possible.

Lu Zhou believed that investigating the frontiers of any discipline required imagination.

Even though the two quantum chromodynamics experts tried to persuade him, that was of no use for Lu Zhou.

How did quantum chromodynamics develop?

Was it not developed by subverting from "common sense"?

It did not matter if Lu Zhou was wrong since failing was part of success.

After dinner, Lu Zhou walked to the R2 1 building. Professor Grayer was waiting for him in his office.

“The data that you wanted is in this USB, including the data from the CMS detectors. Honestly, this data is pretty useless. We only did the tests for an hour, so this thing has no useful experimental results.”

Lu Zhou, “Thanks... I just want to satisfy my curiosity. I’ll still try.”

“Curious?” said Professor Grayer. He smiled and gave him a look of encouragement as he said, “Then I wish you good luck.”

Chapter 170

When Lu Zhou explained his viewpoint to Professor Lu, he thought that Professor Lu would maybe be interested. He did not expect a negative reply.

“The Hadron Collider won’t run for your whimsy theory. In order to look for 750GeV particles, the collision energy must be at least 1.2TeV or maybe even 2TeV. The LHC’s schedule is tight, and CERN has endless amounts of experiments to do. Everyone wants to verify that their theory is correct, but the funding is limited.”

Lu Zhou did not give up and he continued to try to convince Professor Lu, “But Professor, we haven’t found any new particles since the “post-standard model” era, don’t you think this could be an opportunity?”

Lu Zhou was correct. Whether it was the tetraquark or the pentaquark, the confidence was less than five-sigma. They were classified as “signs” and not “discoveries”.

If the signal at 750 GeV confirmed a new particle, Lu Zhou would not know what it would mean to the world of physics. This was because he did not even know what the particle could be.

For him, personally, he was sure that if the discovery was determined to be true, he would receive a Nobel Prize.

“To be honest, I don’t think so,” said Professor Lu Shenjian as he shook his head. He then said, “750 GeV is way too heavy. From a quantum chromodynamics point of view, this is almost impossible.”

Lu Zhou argued, "But we observed this signal both on ATLAS and CMS? Do you think this is just a coincidence?"

"Yes, you're right, it might not be a coincidence," said Professor Lu as he nodded. He pointed to the data on the paper, "But haven't you ever thought that it could just be a two-photon gluon polymerization?"

Lu Zhou nodded and said, "You're right, that is possible. But I need to do experiments to confirm this!"

Professor Lu looked at his energetic student and smiled. He paused for a moment then sighed, "I understand the experiment in your heart as similar things have happened before. I want to help you undergo this experiment, but I cannot convince CERN to do this. I don't have that power."

Lu Zhou fell silent.

The LHC was not theirs, so they could not just use it as they please. Unless they had solid evidence to convince the heads of CERN, they would not be able to use it.

However, this was a catch-22.

If he could not do the experiment, he could not collect evidence, and he could not do the experiment without evidence...

Lu Zhou did not know what to do.

If they discovered this particle in the future, he would have no involvement in it.

After all, he did not work at CERN. He still had to go graduate, and he had to go to Princeton.

Lu Zhou went back to his room and laid in his bed as he stared at the thesis with a blank expression.

Suddenly, he coughed softly and asked in a quiet voice.

“System, is there a particle at the 750 GeV range?”

The system did not answer.

Maybe because my physics level is too low?

Or maybe because this question is too difficult?

F*ck sake, the general points feel so useless.

Lu Zhou took a deep breath and sat up from his bed.

It was too early to give up.

There were still opportunities.

CERN would not start the LHC just for an intern.

However, if he could find someone that had more influence, that person could persuade CERN for him!

Many of the world’s top theoretical physicists were gathered here, so there were lots of influential people.

These people would stay here until the end of the month, and CERN would then conclude the pentaquark research results.

Lu Zhou only had to do one thing, and that was to improve his hypothesis by the end of the month.

...

Perfecting the hypothesis to his theory was not easy.

He had to prove that the sample was sufficiently large enough through mathematical means and that the bulge in the 750 GeV region formed a characteristic peak.

This sounded like a statistical problem, but he did not have enough samples. It was impossible to use statistical tools to solve this problem.

He needed more evidence.

Only then, he could form new conclusions from the evidence.

“... This is 2012-2013 experimental data from ATLAS and CMS detectors. This data was from the Higgs particle experiment, but the Higgs particle is only 125 GeV.”

Professor Grayer sat in his office as he threw the USB into Lu Zhou's hands.

Lu Zhou caught the USB and said sincerely, “It's fine, thank you very much!”

Professor Grayer was one of the few people Lu Zhou could receive help from.

Even though they had only just met, Professor Grayer and Lu Zhou's personality clicked well. Even though the professor was pessimistic about Lu Zhou's research, he still gave him the valuable data.

Although this data was not confidential, it was also closed to the public. If he did not have any connections to CERN, it would be impossible to get this data.

Professor Grayer smiled and said, “You're welcome, it's no big deal. Speaking of which, how's your research progress going?”

Lu Zhou nodded and said, "I've progressed a bit."

Professor Grayer reminded, "If you want to use the Hadron Collider, my suggestion is to find someone who is influential in the theoretical physics community to help you. After all, no matter how much you analyze the data, you still need to use the LHC."

Lu Zhou replied, "That's what I'm planning to do, but I want to make my hypothesis theory more reliable first."

Professor Grayer asked, "Do you have a suitable goal?"

Lu Zhou shook his head, "Not yet..."

He wanted to wait until after a presentation before he handed in his thesis to the presenter.

This was his only method.

Professor Grayer thought for a moment before saying, "Do you want me to recommend someone to you?"

Lu Zhou asked immediately, "Yes, please! Who do you recommend?"

When Professor Grayer saw Lu Zhou's eagerness, he smiled and said, "Frank Wilczek, winner of 2004 Nobel Prize for physics. He's probably the easiest to convince, so you might have a chance."