D. School 86

Chapter 86 - Bird and frog

“Xiao Lu! Is there any arrangement in the afternoon? Go and eat with me!” Since the year went to Professor Nan’s house, the relationship between the two has become closer and closer, and even the speech has been much closer.

“Oh? Who is going to treat you?”, How can the United States do the same? If it’s someone you don’t know, will it seem abrupt if you go by yourself?

“It’s Dyson, and Witten, Thurston, they are all acquaintances, and this meal is still a blessing to you!” Professor Nan laughed, “At first, I bet with Dyson. The one of the seven major math problems will be solved first. He bet on the Yang-Miles equation. I guess Poincare ’s conjecture. I did n’t expect it to be solved by you so soon! “

Hey, the exam was tormenting me! However, Witten and Dyson can go to Lala relationship. Although the two of them are also well-versed in mathematics, they seem to have a closer relationship with the physics community. They will probably have trouble with them, Lu Qiu Jian readily agreed, “Okay, I’ll go to your office to find you later!”

After class, Lv Qiujian threw things to Alfors and asked him to help him back to the dorm. He went to buy a bottle of red wine and knocked on the door of Professor Nan ’s office.

“Oh, you’re pretty particular!”, Professor Nan saw the red wine in his hand at one glance, removed the coat from the hanger and put it on, “Go, it’s almost time, let’s go!”

When they arrived, they found that they seemed to be the latest people. Freeman-Dyson was having a lively chat with Edward Witten and William 0 Thurston. Professor Nan walked over, “What are you talking about? ? “

“We are talking about birds and frogs!” Thurston beckoned to Lu Qiujian and said when they came to sit down. “Dyson divided mathematicians into two types, one is a bird and the other is a frog. We are discussing Who is a frog and who is a bird! “

This is a bit of Cao Cao’s green plum cooking and talking about the heroes of the world! Both Professor Nan and Lv Qiujian were interested, and they did not rush to start eating, and took a glass of wine to join in their discussion.

Dyson is almost eighty years old now. He followed Hardy at the University of Cambridge to study mathematics in his early years (well, which one was discovered in the previous article). After World War II, he came to the United States and worked as an assistant to Einstein. , To make outstanding contributions to the establishment of quantum electrodynamics, of course, his most widely known is the “Dyson ball” proposed in 60 years.

“Dyson Sphere” is a giant man-made structure envisaged. Such a “sphere” is composed of satellites surrounding the sun, completely surrounding the star and obtaining most or all of its energy output. Dyson believes that such a structure is the logical necessity of a civilization that has existed in the universe for a long time and has an ever-increasing energy demand, and he suggests searching for such artificial celestial structures in order to find alien super civilizations.

From the “Dyson Ball” also extended a standard on the rating of the universe civilization, type I civilization can develop and use the natural resources of the world in which it inhabits. (Humans are currently at level 0.7, not reaching Type I civilization); Type II civilization should be able to build things like Dyson **** and be able to handle the full energy output of their star. Type Ⅲ civilizations master the technology of using all the resources of their galaxies. This ability seems to us to belong to God but within the scope allowed by the laws of physics.

Lv Qiujian guessed that 1A7488 may belong to or exceed the Type III civilization, and if the Dyson ball can be completed, there is no doubt that it can meet the requirements of 1A7488, but this is a bit delusional for human capabilities.

Dyson was old enough and had enough qualifications to naturally judge a mathematician who is still alive. His eyes turned to Lu Qiujian and said slowly, “Birds soar in the high sky, overlooking and extending far away. The vast mathematical vision of the horizon. They like concepts that unify our thinking and integrate many problems in different fields. The frog lives in the mud under the sky and only sees flowers growing around. They are happy to explore specific problems Details, only one problem is solved at a time. This is my definition of bird and frog, I am undoubtedly a frog, and Edward is a bird! As for you, you are still young, the future development is still very It ’s vast, and it ’s not easy to make a conclusion at this time. “

“Of course, there is no difference between birds and frogs. Mathematics requires both birds and frogs. Mathematics is rich and beautiful, because birds give it a vast and spectacular perspective, and frogs clarify its intricate details. Mathematics is both a great art and a Important science because it combines universal concepts with deep structures. If you claim that birds are better than frogs because they look farther away, or frogs are better than birds because they are more profound. “, Dyson continued Explained.

Perhaps I feel that I have n’t said enough, and Dyson continues to explain, “Edward and his partners have created the string theory. They fly in the high sky and look at the full picture of the mountains that are thousands of miles away. In universities around the world Here, thousands of humble practitioners working **** string theory are frogs. They explore the details of the mathematical structure that the birds first saw on the horizon. Edwards discovered a new connection and sought a new one. Scientific methods, so they are birds, and the remaining tens of thousands of string theorists can only work within their framework ~ www.mtlnovel.com ~ so they are frogs! “

Seeing Professor Lu Qiujian and Nan as interested in their speeches as Witten and Thurston, Dyson also became excited, “These two distinctions have existed since the birth of modern science, bacon and flute Karl also announced the birth of modern science, but their views were very different. Bacon said: ‘Everything is based on the facts of nature seen by the eyes.’, Descartes said: ‘I think, therefore I am.’, You can see from here Descartes is a bird, and Bacon is a frog. “

“According to Bacon ’s point of view, scientists need to travel around the earth to collect facts until the accumulated facts can reveal the way nature moves. Scientists derive the laws that nature operates from these facts. According to Descartes, scientists only need to Stay at home and deduce the laws of nature through pure thinking. To deduce the correct laws of nature, scientists only need logical rules and knowledge of the existence of God. “

“Newton is essentially a Descartes school. He used pure thinking of Descartes and overturned the Cartesian dogma of eddy currents. Mary Curie is essentially a Bacon school. Tons of bituminous uranium slag, overturning the dogma of atomic indestructibility. “

“This disagreement also extends to the mathematics world. Hilbert’s 23 problems are for frogs who solve only one problem at a time; and the Bourbaki School, which is committed to unifying the entire mathematical framework, is a bird. “

Seems to cite too much, if you are interested, you can go to Baidu Dyson’s speech “Birds and Frogs”.

Twelve thousand plus more, the debt is floating, I will try to pay it back! Seeking the list