

Квантовые сенсации, галактические приключения
и поразительные сведения о Вселенной

ДЖОРДЖ ЛБОЛЬШОЙ ВЗРЫВ



ЛЮСИ
И СТИВЕН ХОКИНГ



АЖОРАК ШВОЛДШОЙ ВЗРЫВ



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Люси и Стивен
ХОКИНГ

Иллюстрации Гарри Парсонса

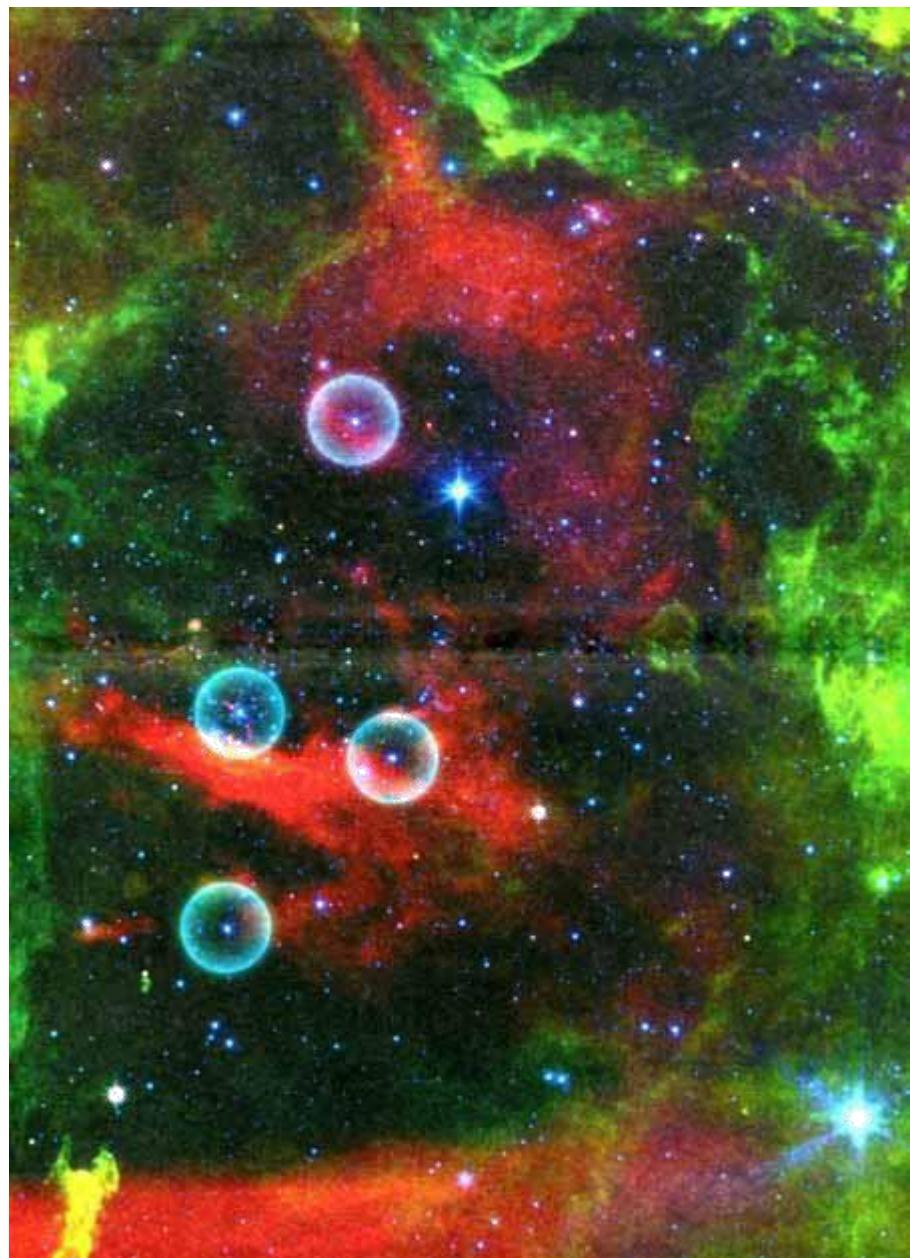


Photo on the flyleaf:

The Rosette Nebula, according to a study space telescope "Spitzer" (NASA), contains a number of very hot young stars of spectral type A. These stars give off a strong radiation, and they give off a strong wind, so that around each of them formed "danger zone" protyazhennostyu to 1.6 light years - or fifteen trillion kilometers. Any of the young stars, once the danger zone is likely to lose its emerging planetary system. The Rosette Nebula is more than five thousand light-years away.

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Will, George and Lola Rose, George, William and Charlotte - the book is dedicated to you

LATEST SCIENTIFIC THEORY!

The plot of the book are interwoven exciting scientific essays that introduce the reader to the latest scientific theories.

These essays are written by outstanding uchènymi our time.

The emergence of the universe

Stephen Hawking,

University of Cambridge, UK

Tèmnaya side of the universe

Michael S. Terner,

University of Chicago, USA

Are there many benefits of Mathematics at unlocking secrets of the universe?

Paul Davies,

Arizona State University, US

"Wormholes" (also known as "wormholes") and time travel

Kip S. Thorne,

California Institute of Technology, USA

ATTENTION: FOR ORIGINAL VERSION was taken FB2.

Editing, layout: Andrew D'Alembert (DARK STYLE) ||YA@DarkStyle.org

INDEX OF SCIENTIFIC SECTIONS

In this book, a lot of variety of scientific information. Some of them are highlighted in a special section. You may want to go back to these sections more than once or twice. To make it more convenient, we did pointer.

Our Solar System Dangers that

threaten our planet Moon Theory of

Everything

Big Bang - The expansion

of the universe Lecture

Vacuums

The space-time and relativity Andromeda

Galaxy Uniformity Particle collisions of

space Large Hadron Collider singular

quantum world of M-theory: 11

measurement!

Chapter first

"Where in the Universe is the best place for the pigs?" - Annie tapped the keys supercomputer named Cosmos.

- Space naydèt! - She said. - Oh, he will find the place better than this poor farm!

The farm, which is now inhabited Freddy - Former porosènok and now a heavy boar - really was not poor, but very nice, and thence all the animals looked happy. All but Freddie.



- Right place does not find - George complained, watching as the Cosmos, the greatest computer in the world goes through its billions of files in search of an answer. - Freddie was so sad, so hurt ... I Do not even looked at me.

- But to me it looked like eschè - Annie said, not looking up from the screen. - Just bored his eyes the pig! As if to say: "Save Get me out of here!!"

The farm is located on nepodalèku Foksbridzha, campus, where George and Annie lived. Mama Annie, Susan, in the morning they drove to visit Freddie, and returning them dnèm, was surprised to discover that George's face red and angry, and Annie is about to cry.

- Annie! George! What is it with you?

- Not us, and with Freddy! - Annie climbed into the back seat, and finally gave way to tears. - He was bad at this stupid farm!

Freddie, pet and friend of George, was a gift from her grandmother. She gave it to her grandson at Christmas, when this same Freddie was eschè porosènkom. Parents George fought to save the Earth from pollution, and this, among other things, meant that they were opposed to gifts for children. They resented that abandoned, broken, lose one's attraction toys turn into giant piles of plastic and metal that pollutes not only the land but also the sea, where they choke whales and seagulls. So my grandmother knew usual gift parents George simply will send back, which is why all the quarrel and razobidyatsya. And then she realized that was a gift from George, it must be a gift that prinesèt planet benefit, not harm.

That is why one very cold day before Christmas, George found on the porch of a cardboard box. In the box was a tiny pink porosènok, to which was annexed a note from her grandmother: "This kid needs a roof over his head Take it to the.

Me! "George was delighted Oh, such a gift is sure to be allowed to leave the parents, and most importantly -. He, George, now has its own porosènok.

But the thing: tiny pink piglets are growing property. They grow and grow until they become cramped in the back garden, where only a place and that the strip of land with a pair of run-down vegetable beds. But the hearts of parents were George vsè still good, so Freddy - so George called porosènka - lived in svoèm zagonchike until it has grown to an impressive size and become more like slonènka than porosènka. George it did not upset - he adored Freddie and spent hours with him in the garden: sometimes something told him, and sometimes happy in his extensive shade and read a book about the wonders of the universe.



But Terence, father George, porosènka disliked. Freddie was too big, too pink and even a pig svinèy: should turn away, as he had already danced the garden beds, trampling broccoli and spinach, and joyfully munching carrot tops. And last summer, when George was about to fly to America, and his parents - on the island of Tuvalu, the pope took the opportunity lightning found a place in a baby boar farm not filed Ye with grave ku, promised his son that they would take Freddie when they return.

However, he did not fulfill the promise. Returned parents returned George, all of their adventure ended successfully; then returned to their nearest neighbors - uchèny Eric, his wife Susan and their daughter Annie - lived for a year in America. And then my mother gave birth to George, twins girls, Juno and Hera, who wept agukali, smiled and wept again. And each time, when some of them stop crying, came the blissful, magical silence. That lasted exactly half a second, and then the second girl was taken to roar - and so long as George did not start to think that his brain was about vzorvètsya and potechèt from the ears. Mom and Dad vsè time was exhausted look, and George was ashamed of chèm something they ask for. So when the neighbors came back, George almost dwelt in them. He made his way into the neighbor 's garden through a hole in the fence and stuck for days visiting Annie eè parents and supercomputer Cosmos - the smartest in the world. But Freddie now had no real home. When the baby was born, my father said that he had enough worries without voracious wild boar, which takes polsada.

- By the way - with pathos he said in response to the protests of George - Freddy - a living entity, a part of the planet Earth. He does not belong to you, and nature!

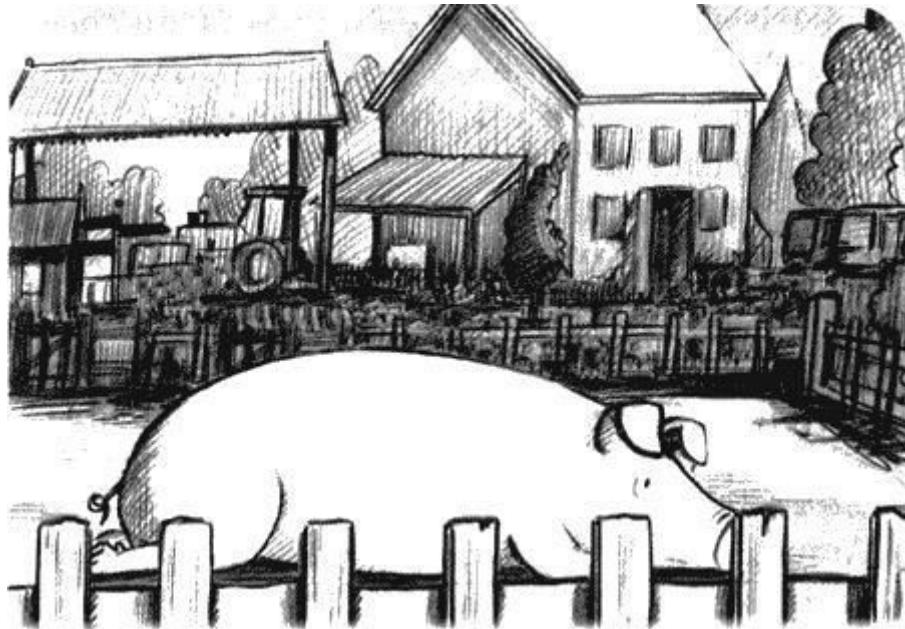
But in a cozy children's farm Freddie was not to settle permanently. In the summer holidays it is closed, and Freddie, along with other animals moved to a farm a little more. This was the real zoo, where the animals were kept most unusual species, and visitors to cut down the shaft, especially in the summer. For Freddie, I thought George, vsè it like for them to Annie's transition from primary to secondary school: vsè unusual and this little bit scary.

- "It belongs to the nature!" - George muttered, remembering my father's words. Cosmos meanwhile vsè eschè worked on a task: find the best place in the universe for the homeless pig. - Freddy, incidentally, has no idea that he was part of the planet Earth. He just wants to live with us.

- He was such a sad face! - Annie said. - Right to cry.

The day arrived in the morning on the farm, George and Annie found that Freddy is on the belly, spreading hooves; eyes had faded, drooping ears. The remaining pigs frolicked cheerfully. Paddock was spacious, clean farm ministers are friendly, but despite vsè this kind Freddie was an utterly. George became painfully ashamed. Vacations passed, and he did nothing to take home Freddy! Even the trip to the farm suggested Annie, not George - persuaded her mother to take them, and then pick up.

Children began to question among farm workers, what happened to Freddie. Those just shrugged. They called for a Woman veterinarian, she examined pig and said that he was not sick, just wasting away with longing. After all, he grew up in a quiet garden, and then lived on a small farm, where he visited a few friends of children. And here all around strangers noisy animals and crowds of visitors, and maybe it was too big a shock for him. Freddie had never lived among pigs, did not know how to conduct yourself with them, and generally thought of himself as a man rather than svinèy. He did not know what to do in this strange place, where a lot of people staring at him, hanging over the fence.



- Can we zaberèm him home? - George asked.

Ministers confused. They began to talk about animal welfare and transport rules and that Freddie is now simply does not fit in the garden behind the house.

- He'll get used to! - They assured George. - You'll see, next time it will be different.

- But he's here for a few weeks - said George. - Why is he still was not used?

To this the ministers said nothing - either did not hear, or pretended to.

Annie, meanwhile, come up with something else. As soon as they returned to her home, she began to realize his plan.

- So, so, - she said, including the Cosmos. - Pick Freddy back to you, we can not

- Your dad instantly otoshlèt it back. Take it to us, too, it will not work ... Alas, Annie was right. George obvèl look cabinet Eric. Space was at a heeling

pile of scientific articles around towered menacingly tottering towers of books, unfinished pyramid of cups with tea, everywhere strewn scraps of paper on which was scrawled the important equation - Space Annin helped Dad in the work on the theories of the origin of the universe. It seems that the task of finding a suitable home for the pig was not inferior to them in difficulty.

When Annie with parents only settled in the house, Freddy showed up uninvited guest to them - and wild boar swept the office of Eric, swept to the sides of the stack of books. However, if Eric was not angry: arranging a mess, Freddie inadvertently helped him find the book you want one. But it was a long time ago; now Annie and George knew that Eric will not be happy pig in the house. He has too much work to eschè tinker with the pigs.

- We have to find a good place for Freddy - tvèrdo said Annie.

Jin! The screen came to life and the cosmos flashing colorful lights - a sure sign that the greatest computer in the world is happy.

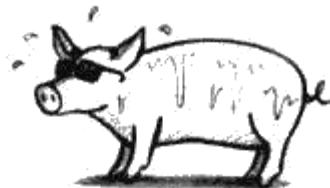
- I have prepared a summary of the data on the local space environment and their suitability for the porcine existence of life forms, - he said. - Point to a picture, you will get information about the possibility of living pigs on each of the planets of the solar system. I allowed myself - computer smugly snorted - illustrations provide all their own comments.

- Wow! - Annie admired. - Space, you're my hero!

On the Cosmos appears eight paintings entitled the names of the planets of the solar system. Annie started with Mercury ...

Меркурий

Свинья, опалённая Солнцем



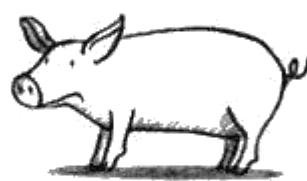
Юпитер

Свинья идёт ко дну



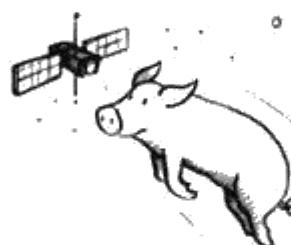
Венера

Пахучая свинья



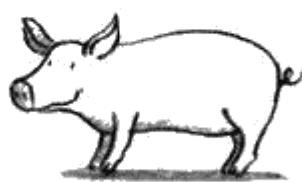
Сатурн

Орбитальная свинья



Земля

Счастливая свинья



Уран

Свинья вверх тормашками



Марс

Прыгучая свинья



Нептун

Свинья на ветру



Our Solar System

Chapter Two

- No, in the solar system Freddie will not survive, - said George, looking at pictures. - On Mercury it will burn, Saturn will sink in clouds of poisonous gas, Neptune its general wind unesèt nowhere. Will fly and think, "It would be better, I sat myself on the farm!" In short, all these planets are not suitable.

- All but Earth - Annie muttered, wrinkling his nose: it meant that she thinks best. - Earth - the only planet in the solar system, suitable for life ... And pigs

- They are the same people! - Suddenly she said. - I mean, for the pigs have to look exactly the same planet as for the people! Do you remember my dad talking about the search for a new planet on which humanity would live if our Earth has become uninhabitable?

- That is, if we ran into a giant comet? - George said. - Or would come global warming? Or if everywhere on Earth began erupting volcanoes? Or if she had turned into a barren desert? - From his parents, ecologists, activists and fighters for the salvation of the Earth, George knew about all the horrors that can happen to a home planet if humanity does not come to his senses and immediately nachnèt not take care of her for real.

- Yes Yes! Dad says mankind must look for a new home - Annie said. - It's like we're looking for a home for Freddie. Pigs are suitable for life around the same terms as men. So if we naydèm in the universe is a place where people can live, hence, our Freddy there is also good.

- It turns out that Cosmos need only to find a new home for mankind, and there too we naydèm, where to place Freddie?

- Exactly! - Annie fun confirmed. - And we can sometimes see him in space, so that he again did not become sad and lonely.

Both were silent, feeling that their plan dalèk from perfect.

- That's how much time we look in space pridètsya house for Freddie? - Finally I asked George. - Your dad vsè looking and looking for a new place for mankind and is not sure nashèl ...

The dangers threatening our planet

- Hmm. Maybe it's better we did settle vsè Freddie somewhere closer to home? Thus, temporarily, just in case.

- Yeah, - George agreed. - And it would be good vsè still on planet Earth. But that's what I thought, wherever it was this house, on Earth or in space, as we have to drag Freddie? He did not porosènochek!

- This is the main genius of my brilliant plan! - Annie brightened. - We will help Space. If he have with you on a journey through the universe, that he

should throw a little pig from one place to another Earth? Space, am I right? Well, tell me!

- Annie, you're definitely right - solemnly proclaimed computer. - Thanks to his wisdom and intelligence, I can easily perform any of the tasks mentioned above - or both.

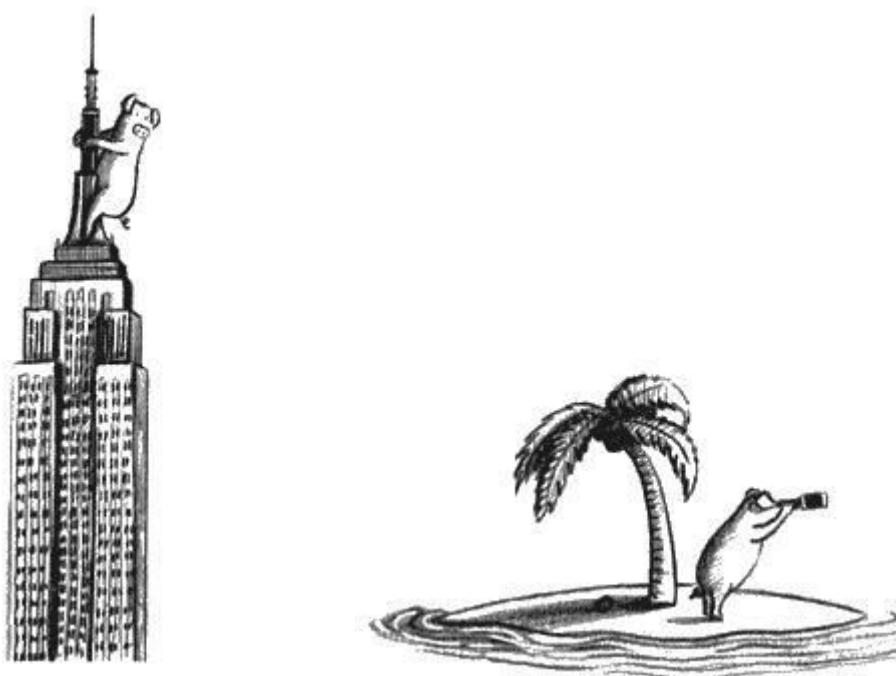
- But it is possible? - George asked. - I mean, your dad did not get angry if he found out that we use it to move the pigs supercomputer?

- I have no reason to inform Eric about this with you co pig-moving, - humbly proiznès Cosmos. - Of course, if you do not give me such a command.

- Got it? - Annie said. - If we ask Cosmos to move Freddy in a comfortable and safe place, he would do it.

- Hmm ... - George grunted doubtfully.

From my own experience of travel through the universe, George knew when Cosmos chooses the destination, the consequences are unpredictable. And he, George, do not want propihnuv Freddie created the Cosmos Portal - the entrance into the universe - suddenly discover that the hog was in the sausage factory. Or on the roof neboskrèba. Or on a deserted tropical island, where Freddie is going to suffer from the heat, not to mention the loneliness ...



- Space - politely proiznès George, - tell me, please, as you could when podberèsh right place, first show it to us, and not to send immediately to Freddy? And eschè: it should be close to us with Annie could go on a bike ride, - because, you know, if we vsè time will ask for your help, we're caught quickly.

- The request is processed, - said Cosmos.

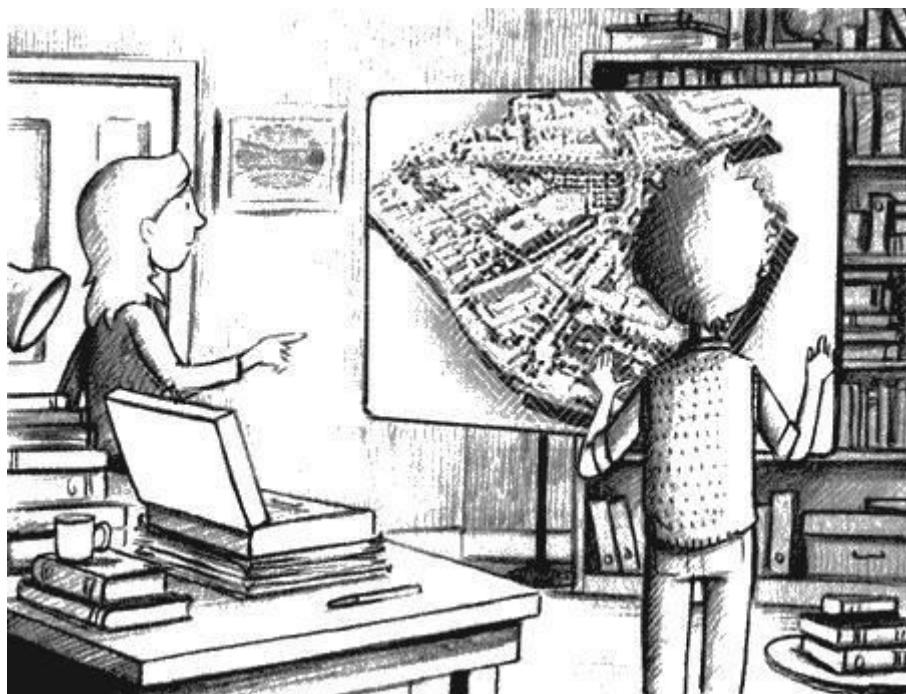
A year earlier, the Cosmos has experienced very tyazhèlyu damage. Eric was able to fix it, after which the supercomputer has become much friendlier than before. There was a quiet hum of the room and there was a picture soedinènnaya with the Cosmos two thin rays of light.

- Map! - George guessed. - It looks like ... Wait, it's Foksbridz!

- It's true - proiznès Cosmos. - Trèhmernoe image. I can vsè the same as that of your Google, only better. Upstarts sassy! - Space snorted.

- How beautiful! - Annie gasped.

On a map of the cosmos were deposited every single part of an ancient and glorious campus Foksbridzha - streets and alleys, walls, towers and spiers, chetyrèhugolnye yards colleges ...



In the corner of one of these courtyards glowed tiny red ogonèk.

- This is my father's college! - Udivlènno said Annie. - Where ogonèk flashes. Why do you show us the father's work?

- According to the information in my files, pigsty must be spacious, well ventilated, quiet, tèmnym, but with access to sunlight. Place marked on the map - it's empty wine cellar located in the basement of the ancient tower. It is equipped with a ventilation system, the air is clean, there is a window on the ceiling. Cellar for many years not being used, so that your friend there will be warm and comfortable - on the condition that you will catch a straw farm.

- Are you sure? - George has doubted. - And he will not be there to feel like a prison?

- Your friend is happy provedèt a few days in peace and quiet, - said the Cosmos - and you in this time podberète him permanent residence.

- The main thing now - to take him to that farm, so hurry! - Annie picked up. - It is urgent, urgent to save him, while he was not withered!

- Can we look into the cellar? - George asked.

- Of course - said Cosmos. - I will create the window so you can verify the validity of the information received.

Map instantly melted into air, and began to draw Cosmos Portal - a rectangle of light rays. Annie and George many times used the portal to travel through the universe, and then the portal was a door. But now the Cosmos is not going anywhere to send their children - he just wanted them something to show, therefore, drew a small window.

- How amazing! - Annie jumped. - Why we have not figured out that you can travel with the cosmos and our planet, not only for others!

The window darkened. George and Annie struggled peered into the blackness.

- Cosmos, nothing is to be seen! - George said. - I thought you said that the natural light there? I do not want Freddie thought if he was in prison!

- I checked the location - in the Cosmos's voice sounded confused. - The point on the ground is correct. Perhaps curtained window?

- Wow! - Annie whispered. - This darkness ... it is moving!

Indeed, the impenetrable darkness outside the window as if swayed.

- Do you hear? There's voice!

- Excluded - said Cosmos. - According to my information, the cellar for a long time is not used.

- Then what are all these people doing? - Annie asked in confusion. - Look, look!



George stared - and saw. It was not an empty temny cellar - it was a basement jam-packed with people in the robes of ferrous. All these people, apparently, stood with his back to him: George saw only their heads and shoulders.

- They will not notice us? - Annie whispered.

- If they turn around, they can see a portal, - said Cosmos, quickly scanning the room. - I have to admit that although it is completely contrary to logic, probability theory, and common sense, the wine cellar is clearly filled with human beings.

- Ji-alive? - Choked voice asked Annie. - Or mèrtvymi?

- Breathable and functioning, - said Cosmos.

- But what are they doing?

- They ...

- ... Now turn to us! - Terrified George interrupted. - Space, shut up!



Space portal shut so fast that no one in the basement did not have time to notice the tiny flashes of light. And if I saw vsè still none of these people would not have occurred to him that their secret meeting observed two frightened children and one very puzzled supercomputer.

Here to Annie and George, who were neither alive nor dead, donèssya voice from the wine cellar:

- Long live the false vacuum, the giver of life, energy and light!

It turned out Cosmos so hurry to close the portal that is only switched off the display and the sound left. Now they did not see what was going on in the cellar, but well heard.

There was a dead silence. Annie and George were afraid even to breathe. Finally, as if in a very terrible auditions, the voice sounded again.

- Dangerous times! - He hissed. - There were, perhaps, a few days before because of a tiny bubble, encompassing the energy of the cosmic explosion, the universe is smashed to smithereens. Uchène-attackers at the Large Hadron Collider will soon begin a new experiment with high energy. The last time we were able to stop them, but now the situation where serèznee. At the very moment when these maniacs include your car, a catastrophe that will destroy the universe. Because of their excessive ambitions we all simply disappear without a trace.

The crowd in the cellar greeted these words with angry shouts and whistles.

- Quiet! - Shouted a voice. - I give the floor to our distinguished expert. He vsè explain.

There was a new voice - low and middle-aged:

- Supervises these dangerous madmen somebody Eric Bellis uchèny of Foksbridzha.

Annie screamed and covered her mouth with his hand. Eric Bellis! It's eè Dad!

- It Bellis is the experiment on the collision of high-energy particles. This experiment, which is held on the ATLAS detector of the LHC, now entering the most dangerous phase. If Bellis will receive the collision energy, which seeks, then, to my raschètam, with a high degree of probability nachnètsya self-destruction of the universe - from the fact that a particle of true vacuum will be created. If the collision of particles in the collider will arise even the tiniest puzyrèk true vacuum, he nachnèt

expand at the speed of light, replacing him false vacuum and destroying all matter! All atoms of the Earth will disappear in less than one-twentieth of a second, and after eight hours and will not be the solar system. And this is just the beginning ...

The voice began to weaken and move away. Cosmos struggled to troubleshoot the connection, but the portal is now came a sinister shèpot.

- This puzyrèk will expand forever. Thus, Bellis had done the unthinkable - it will destroy the entire Universe ... - And his voice trailed off.

George and Annie were frozen like statues. For a moment the room was silent mèrtvaya.

First started up the cosmos. On his screen appeared and flashed a big red letters: "Danger zone Moving pigs is not recommended!!!"

- Yeah, Freddy we did not lodge! - Annie said, as if waking up. - There is nothing to do around these loonies. Especially if they say nasty things about my dad!

George swallowed. About chèm vsè still we were talking these people?

- Listen, - he said in a hoarse with emotion, - who are they?



Chapter Three

- What are those "who are"? - I heard a voice vesely.

The door opened, and in the office of Eric appeared in person: rastrepannye chernye hair, glasses, a tweed jacket, in his right hand a steaming cup of tea, under the left arm armful of scientific articles.



- Hi, Annie, Hello, George! Enjoy the last days of vacation?

Friends stared at him. The faces of both were stone.

- It seems that the answer is no - Eric smiled. - Something wrong?

In recent years, the face of Erica did not leave a smile. If these days are asked to describe George treh neighbor in words, he would have said: "In the ears happy." Or this: "According to the ears busy." Generally, the stronger Eric was busy, the more he was beaming with happiness. Ever since he returned from the United States, where he worked at the World Space Agency and searched for traces of life on Mars, ucheny vsye time and hurry vsye time was in good spirits. He was happy at home with semey, he liked to teach mathematics at the University Foksbidzhskom and esche he was delighted with the grand experiment, which took place under his leadership at the Large Hadron Collider in Switzerland.

This experiment was a continuation of work begun uchennyi hundreds of years ago. The aim was to find out what is in the world and how the tiny elementary particles

interact and pervades the universe. To do this, Eric and other uchèneye attempted to create a theory that would allow them to vsè understanding of the universe.

Theory of Everything

This theory, which was given a simple name - "theory of everything", was the greatest goal of science. It could explain uchènym not just when the universe was created, but also, and maybe even how and why it occurred.

With the new results obtained at the Large Hadron Collider, it seems that the emergence of a theory of everything - not far off, and it is not surprising that Eric was in a good mood. This is good, that he did not even scold the children for vklyuchènnyy without demand supercomputer.

- Looks like someone turned on the Cosmos? - Eric frowned slightly, but his eyes were laughing. - Keys strawberry jam though not stained, like last time? - He leaned over the computer and prochèl on the screen: "Where in the Universe is the best place for the pigs" - Yeah ... Now I understand ... - He ruffled hair daughter. - My mother told me that you and George are worried about Freddie.

- We were looking for him a new house - Annie said.

- And how found? - Eric drove to his old rickety chair and sat on kolèsikah between children.

- Space searched the entire solar system, - said George, - but we still did not choose.

- That's nice, - muttered Eric. - Hardly imagine Freddie on Pluto.

- Then we thought - George continued, - if naydètsya planet on which people could live, that she and Freddie podoydèt. But so far we have not found this.

- And then - Annie intervened - we began to look closer to home, well, here in Foksbridzhe, some place to settle there Freddie a couple of days until we podberèm his planet. And we saw in the basement of a terrible chèrnom people who say that your experiment at the LHC will destroy the entire universe!



Eric prishèl instantly enraged.

- Space! - He roared. - What are you got up here?!

- I just wanted to help - plaintively bleated supercomputer.

- Galactic compote! - Eric cursed. From his complacency was gone. - About chèm were you thinking when allowed children to overhear these idiots?!

- They said that you will destroy the false vacuum - George remembered - and that because of this, the whole universe will disappear. It's true?

- Of course not! - Eric said angrily. - This utter nonsense. Do not pay attention to them. They deliberately intimidate all, because they do not like our experiments in Switzerland.

- But these people were just in twoèm college! - Annie squeaked.

- In college, shmoledzhe ... - Eric growled. - Yes, even if the World Academy of Sciences! From this delusion that they are not perestaèt be nonsense.

- So you know them?

- Not quite - Eric admitted. - They hide their names and faces. We only know that they call themselves "secret antagonists of the Large Hadron Collider."

- Secret antagonists of the Large Hadron Collider ... - Annie repeated. - It turns out "tobacco".

- Exactly! Excellent sokraschenitse - Eric laughed. - It is immediately clear that one of them harm. And most importantly, that their cause tobacco!

- But what do they want?

- In the last year, - said Eric - this tobacco - and am now call them - demanded that we stop working on the collider. They said that by starting the experiment, we thereby create chèrnuyu hole. We, of course, continue to work quietly. As you can see, we are still alive and well, and our world is not absorbed chèrnaya hole. we

We thought that after that, they would sit quietly and not stick out. But it was not there! They invented this nonsense with the "vacuum" and want to prevent us to begin a new, unprecedented experiment c high energies.

- But why should they? - George asked. - Why did they invent vsè time some stupid theory?

- Because they do not want us to have happened - Eric explained. - Because our goal - to understand the universe, the whole, entirely. We need to learn not only how it works, but why. Why it exists at all? Why do we exist? Why are the laws of nature are what they are? That is the main question concerning the universe and life in it. And they do not want us to find an answer.

- So this puzyrèk that will destroy the entire universe - fiction? Exactly? - Just in case I decided to make George.

- Nonsense cosmic proportions! - Eric confirmed. - But despite this, - then he frowned - vsè more people start to believe what he says TOBACCO. So we changed the plan for a new experiment - in case TOBACCO again prepared for us some sort of dirty trick.

- And when nachnètsya experiment? - George asked.

- It has already begun! - Eric said. - Accelerator works detectors are permanently enabled, a few weeks ago we even have raschètnoy power. That's just - udruchènno Eric shook his head - because of tobacco, we are forced to remain silent as a fish. Okay, forget about these assholes. Where do we send the same vsè Freddie? What do you say, Cosmos?



Cosmos, though slowly amends hastily brought to the screen a new image. It was a beautiful landscape: grove in the valley Slight breeze stirs the leaves, flowers pestreyut, dancing butterflies, the sun is setting ...

- This is the right place for your pig - prodrebezzhal Cosmos.

- Well? - I was inspired by Eric. - Suitable? Do you want to settle there, Freddie?

- Very nice, but ... - George began, intending to ask, where is this place, but Eric, obviously in a hurry, without listening.

- That's fine! - Uchèny drummed on the keyboard. - For children, though it is difficult, we now prepare to build a double portal ...



Annie and George did not have time to blink an eye as Kosmos opened a portal leading to the farm Freddie, Eric and jumped into the pen. Kabanchik so taken aback, that did not resist when Eric began to gently push it to another portal, created the cosmos helpful. Freddie obediently squeezed into the second portal ... and trotted into the grove, which is still visible on the screen.

George and Annie eyes round with astonishment watched as Freddy, a moment out of sight, appears again and happily runs through the valley, pushing the sides tall grass.



Eric backing came from the portal and prudently closed it behind him.

- He eschè we need when we visit Freddie, - he said. George noticed that
κ corduroys Erika clung straw. - By the way, it is necessary to come up with something that was not on
the farm commotion. After all, they decide that the boar escaped into the wild, catch, and throw it.

- And what did you tell them? - Annie asked.

- I have no idea! - Honestly, Eric. - But once I was able to explain the origin of the universe, then,
hopefully, I'll be able somehow to explain the disappearance of the pig.

The screen space until the text "on the movement of pigs The mission is successfully completed. Pig
safe. Good mood. Food, water and shelter are provided. Threat level
- Zero. "

- And now, - said Eric tvèrdym voice, meant as the children were well aware that the conversation was over, - I've got to prepare for tomorrow's lecture. And you - the first day of school.

Friends reluctantly left the office. Summer vacations are over. At Annie stayed exactly one night to perform the tasks that it vsè summer left for later. George it was time to go home. In the morning he would be the first time to go to a new school, and he hoped that the baby would not cry the whole night - and give him a good sleep.

- Bye, George - Annie sighed.

- Bye, - sadly, George answered.

Both finished the sixth grade and now moved from primary to secondary school: Annie - in private, George - an ordinary town.

- Here the question arises, why should we go to high school? - Annie could not stand. They stamped at the front door - both did not want to leave. - Why do we not give in space research school? We were there to round honors! Well, who, us besides, I saw right at the nose of the rings of Saturn, he landed a few steps from the methane lakes on Titan ...

- ... I looked like one sun goes down, the other goes, - picked up George, remembering the planet in a binary star system, where they were by mistake once.

- It's not fair! - Annie concluded. - Forces us to pretend to be ordinary kids when we - extraordinary!

- Annie! - Donèssya of the office of Eric's voice. - I hear vsè! Those who do not do their homework, space is not allowed! These are the rules, and you know them well.

Annie made a face.

- Yes Force be with you - she whispered to George.

- And you! - He said, then turned and headed for home.

Chapter chetvèrtaya

The first day at a new school turned to George endlessly long corridors and confusion in the schedule. Time and again he did not get into his class and not on their lesson. Vsè unknown, too many people, too much noise - from all that George was very uncomfortable. Perhaps, he thought, the same feeling and Freddie in when native zagonchik the house suddenly appeared first on a single farm, and then on the other, huge. No wonder that Freddie so sour.

The boys, who in the old school, behaving like the masters of life, here, wandering the corridors and floors to find the right office, looked shy and confused. In elementary school, George and some of them did not get along, but vsè like when you see familiar faces like something quieter. Here, among all these strangers almost adult men, even former sworn enemies seem best friends.

When George began a little to understand the maze of corridors, passages and stairs, lessons suddenly ran out, and he walked to the gate of the school. Once upon a time it every day after a call from school was hiding in the locker room and waited until all go, then to go home without fear of pursuit.

But that was before, when he did not yet know how to travel through the universe and unravel the mysteries of eè. Ever since George became friends with Annie and learned about the wonders that surround our planet, he forgot his earlier fears. Togo, who faced nose to nose with a crazy uchènym in a distant solar systems, not so easy to scare.

But the real life George changed not space travel on their own. The knowledge and experience they priobretènnye - that's what made him fearless. He believed in themselves and know that to cope with any difficulties.

Remembering the events on the way home last night, George thought up to drop to Eric and ask if they can not now visit Freddie. He reproached himself for having not figured out where is the grove in the valley. Seemingly there is certainly very nice, but George was not even sure that it is on Earth. What if dodgy Space perenès pig on dalèkuyu unknown planet suitable for life? George consoled himself with the fact that Eric knows where Freddie, but it would be much safer if he knew it too.



George flew into the kitchen, greeted her mother and tiny sestrènki entirely stuffed in her mouth pea and cabbage cake (my mother prepared solely from the fact that they grew in the beds, and the recipes are sometimes picked weird). Then he ran to the backyard, where Freddie had lived through a hole in the fence, slipped into the neighbor's garden, pronèssya the path and banged on the kitchen door. No one answered. George pounded harder.



Finally the door opened, and Annie seemed to zelènoy new school uniform.

- Oh, it's you, George.

- Hi, Annie! - George said cheerfully, ignoring the fact that Annie did not seem to him too happy. - Well, like in school? I is horror, but in general, in my opinion, there is not so bad.

- I ... um-m ... vsè ok - she said somehow quiet. - And you ... uh-uh ... you wanted something?

George asked. He ran to Annie every day, and she had never asked him why he prishèl.

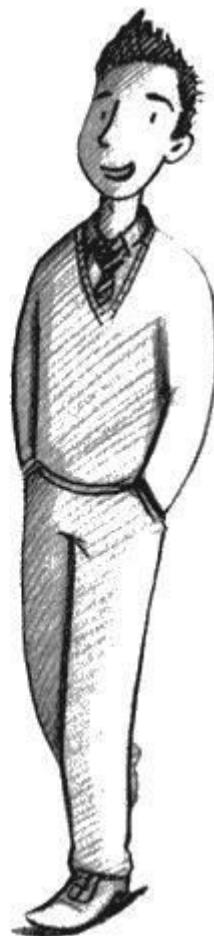
- Well, - he said, slightly flustered. - I wanted to ask your dad, like name of the place where he had sent Freddie. So we can see him.

- Pope not at home, - she said apologetically. - I'll tell him that you came. And he will respond to you via email.

And Annie - George could not believe my eyes - started to close the door in his face. But it became clear after a moment vsè.

- Who's there? - Donèssya voice from behind her, and a voice that clearly belonged to a guy older than George.

- Yes, it's ... uh-uh ... this is our neighbor - Annie helplessly turned her head back and forth, as if not knowing on which of the two to watch. - He's my dad to prishèl.



She opened the door a little wider, and George saw the owner of the voice. It was a boy a head taller than him, dark, with hair sticking up chèrnymi dressed as Annie in zelènuyu form.

- Hi! - He nodded to George over the head Annina. - Unfortunately, Erik was not home. So you go. We tell him that you came.

George jaw dropped in amazement.

- I am, among other things, called Vincent - the boy casually.

- Vincent from my school. He is also the first day of her today - Annie said, trying not to meet with George glances.

- Serèzno? - George eschè more surprised. - You, too, in the seventh grade?!

Vincent oskorblènno cocked his head.

- I'm in the tenth. We have long been familiar with Annie - not at school.

- That's how, - said George.

- In Vincent's dad - rezhissèr - as if by chance, Annie said, but only a blind man would have noticed that she is fascinated by this Vincent. - He knew my dad, because I was shooting a television series about his work.

- Rezhissèr ... - George repeated, feeling that it knocked out. - Very cute. And my dad is engaged in organic farming. - He defiantly looked at Vincent.

- Idèm, Annie, it's time, - said Vincent. - The board do not forget!

- We're going to ride a skateboard, - explained George Annie. - Mom will throw us to the park. Vincent - the champion of skateboarding.

- Ride ... - George said again, trying to keep his voice as though chèm had happened, but he did not really happen. - Well, let's roll!

He turned abruptly and walked to the hole in the fence. Annie and Vincent watched him go.

George wanted neprinuzhdènno easily slip into the hole like a hundred times before, but according to the law of meanness, hit his head on the fence with a thud and flopped to the ground. Annie and Vincent stood in the same place, which was very very disappointing and dishonest. The main thing when he knocked on the door, he did not open - and now stick out here as driven.



Gathering strength of will in a fist, George got to his feet and with dignity stepped into the hole, as if nothing had happened. In fact, he was uyazvlèn deeply. In just the first day of the school year - and please, Annie has a new friend!

What this means for him, George? Nothing special. It's just that it is no longer not only Freddie and Annie. George gripped a keen sense of loneliness. Head down, he poplèlsya home.

A little later, do it all the lessons and home affairs, George decided to sneak over to the neighbor's back porch - suddenly Eric was back as Annie rolls in the park with his champion?

The door was ajar, and George slipped inside. Everything was quiet, dark and somehow cold, as though suddenly began winter, although still outside were the first days of autumn, tèplye and solar. The house seemed empty - but if the rear door is open, it means that someone here vsè still there! George paused and listened: no sound. Looking around, he noticed that breaks the pale blue light from under the door of the study. George gently drummed his fingers on the door.

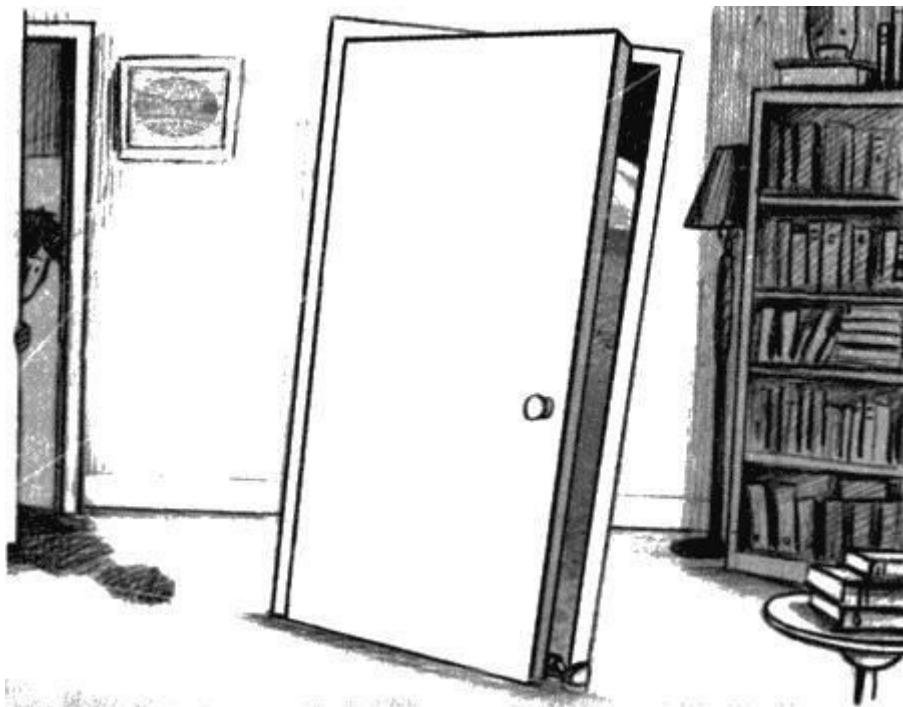
- Eric! - He called. - Eric?

He put his ear to the door, but did not discern any sound except lègkogo buzz - then Cosmos vklyuchèn and running.

George hesitated. He did not want to interfere with Eric - he suddenly considering another important theory - but also miss the opportunity of speaking alone also did not want him. Quietly, with his fingertips, George pushed open the door.

Inside it was not a soul, unless, of course, do not take a living soul Cosmos supercomputer that demonstrating full alert all the lights blinking like a Christmas garland on èlke.

From the screen differed two beams of light, by which the cosmos is always painted portal - the starting point of space travel, George and Annie. Portal itself is hung in the center of the room, held by these thin rays. The door was open to the universe, and that it is not slammed shut, was slipped under neè Erikova worn shoe.



Through the crack was visible desolate, cratered surface on a background of impenetrable blackness. George opened the door a little wider in the hope to see something eschè, but then podnès hand to his eyes, osleplènnny sunlight.

He stepped away from the portal, looked around and suddenly noticed on the chair his own well-worn suit. George grabbed it and quickly pulled over and checked the levels of oxygen in the bottle, buttoned, as taught by Eric, and prepared for the spacewalk.

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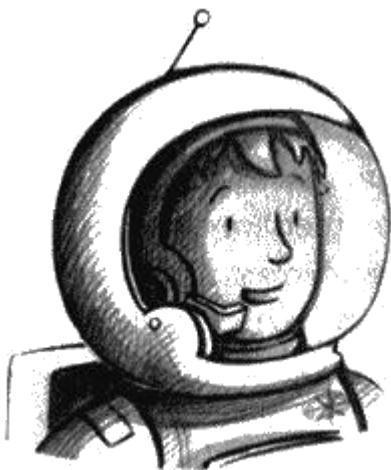


Wearing gloves kosmonavtskie, George opened the door portal. Before him lay the surface of the moon - the closest to the Earth a heavenly body. On all sides, as the eye could see, stretched grayish dusty lunar landscape; hillsides were covered with blinding sunlight, been laid in the crevices of harsh shadows.

Moon

Between the mountains and the portal George discerned tiny figure in a white suit, huge jumps are moved to one of the craters. By George jubilant jump immediately guessed it, Eric. On Earth, Eric is usually barely plësya and he looked dreamily scattered - but in space it vèl as though finally shrugged off his load of earthly cares and can now frolic without interference, heartily enjoying the wonders of the universe.

George boldly crossed the threshold and put it on the surface of the Moon, first right, then left foot. Earth was left behind. George flew high and fell again; lunar soil crunching under his feet. Due to the weak gravity on the moon, you can easily jump to a few meters, it is only a little push.



- Hello Earthlings! - He yelled, moving giant leaps vperèd. He knew that no one in the world will not hear it, but he just had to say something, to mark the first steps on the moon. Against the background of the sky chèrnogo planet Earth looked like zelèno blue precious stone streaked with white clouds. Although they are with Annie before been in space, never eschè George did not see their home planet so close.

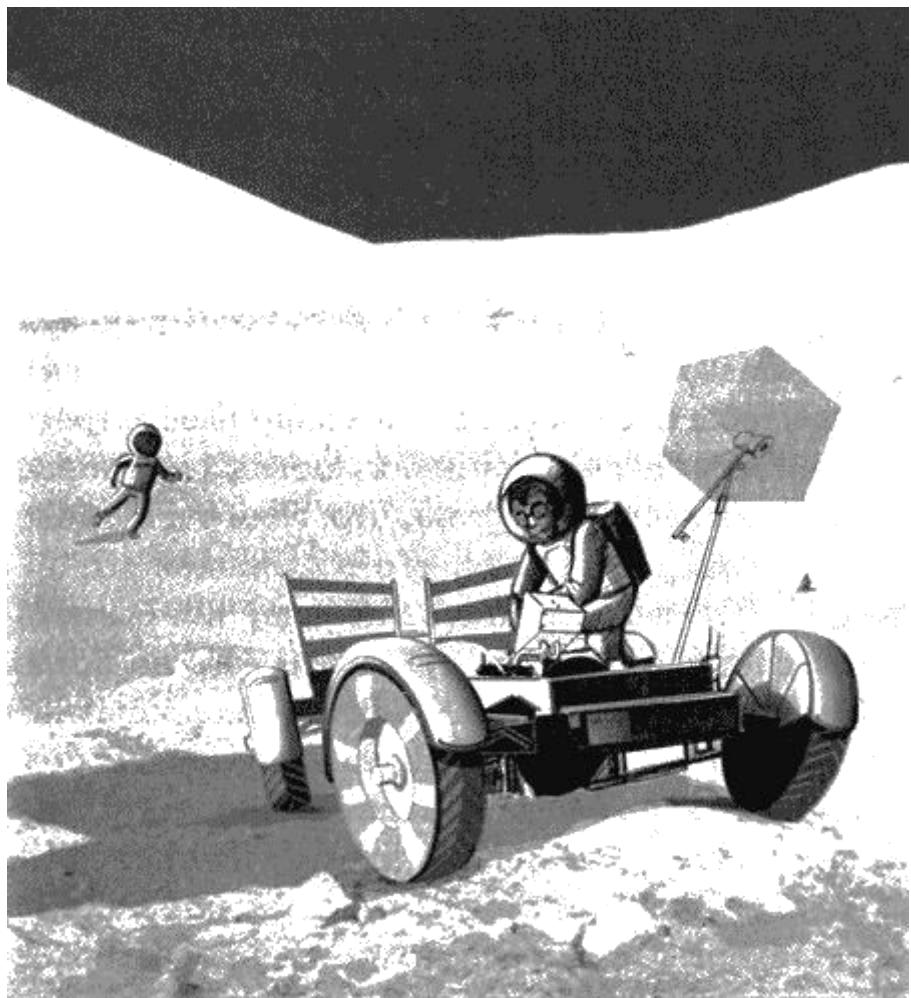
C Mars it seemed a tiny point of light in the sky.

C Titan eè they were unable to see at all because of the thick layer of gas clouds which enveloped this quaint promèrzshy Saturn.

From the system of double star 55 Cancri Earth is also to be seen. Even if George and Annie there was suddenly a telescope, they could guess where the Earth, except for a barely noticeable color changes in the light of our sun.

And here, on the Moon, George was close enough to Earth to see eè in detail, and at the same time far enough away to be stupefied by eè incredible beauty.

Plenty admiring home planet, he jumped to Eric, quickly overcoming the distance between them. Uchèny meanwhile descended into a shallow crater and looked at it some car covered with a thick layer of dust.



Eric! - George shouted into the microphone, built-in kosmonavtsky helmet. - Eric, it's me, George!

- The forces of gravity! - Anxiously he exclaimed Eric, looking up from the lunar rover. - Well, you scared me! I was not expecting to meet anyone here.

Eric did not hear the jubilant shouts of "Hello, Earthlings!" Because the built-in transmitters in spacesuits designed for short distances.

- I voshèl in your office, I look, and there is a portal - George explained. - What are you doing here?

- Yes, I'm all for a moment - proiznès Eric, if defensively. - I wanted to take the lunar stone, then to consider it carefully. I have an idea naschèt extraterrestrial civilizations. You know, I think that if some time in the past - let's say, a hundred million years ago - we were visited by aliens, they have left no traces. And, in my opinion, no one did not yet explored the lunar rocks for extraterrestrial traces. So I decided to look at the moon rock with a fresh eye - it suddenly show signs of life? Earlier this no one came into his head. Well, I ran here for the stone - and see what nashèl! It's a lunar rover.

- And Does It Work? - George asked, quickly sliding to Eric the slope of the crater.

Rover looked like a machine with wide tires on any drive on the beach sand. As if someone ride on it on the moon, and then dropped.

Eric got into the driver's seat.

- Think zavedètsya? - George doubtfully looked at the rover.

- Batteries must have long been exhausted, - said Eric, wiping the dust from the rover sleeved suit.

- A steering wheel is not present, - said George. - How do they manage?

- Good question. - Eric wiped his sleeve on leg, causing a white suit appeared wide strips gray lunar dust. - First you need to make it ...

He podèrgal T-shaped lever between the seats, but nothing happened. Lever, it seems to have been built into the control panel. Wiping thumb gloves dust around the arm, Erik discovered breakers with the words "ON", "Power Drive", the "Power Drive".

- Aha! - Eric said happily. - Houston, we have a problem!

George jumped into the rover, sat next to Eric and asked ozhivlènno:

- And what will happen if poschèlkat switches? Should we try?

If only Eric had not remembered that he was an adult, George thought, and did not say that you can not touch other people's rovers. But Eric did not podvèl.

- Of course we try! - He said.

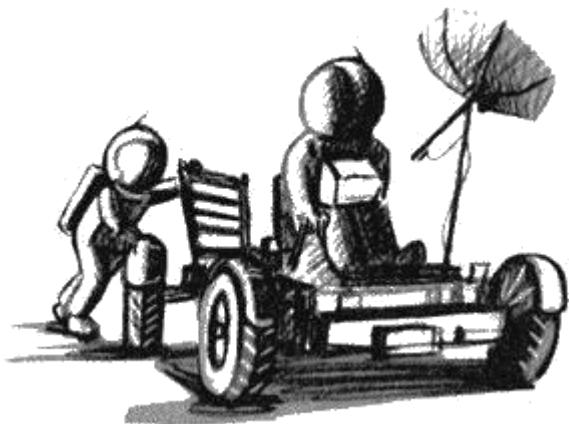
Eric turned on one by one, all three switches, then pulled the lever - and the rover pulled vperèd so quickly and unexpectedly, that both of them thrown into the air and thrown out of the car.

- Hooray! Goes! - Erik jumped back. - George, please, push him from behind! With the local low gravity it should be a piece of cake. And I try to get out of the crater.

- Why should I push? - Growled George. - Maybe I want to keep ...

However, he obediently stood behind the rover and prepared. Eric pulled the lever again. Kolèsa rover whirled, showering George fountain of dust and stones.

- Strong! - Eric shouted.



George pulled hard as I could, and crawled out of the crater the rover to the plain.

- There is! - Eric breathed. He happily potèr kosmonavtskikh hands in gloves and jumped down from the driver's seat. - That's better! - He lovingly patted the rover. - Which car as well? Forty years pylilsya - and please work as pretty. That's what I understand, the technique!

- And it is whose? - Asked George, from head to toe covered in lunar dust.

- The astronauts left - Eric said. - The crew of one of the "Apollo". Look over there. You know, what is it? The landing stage of the lunar module. - He pointed into the distance, on a mysterious chetyrèhnogiy thing. - Here it is, the history of the cosmos, right in front of us!

Both respectfully silenced. Then Eric winced and shook his head, finally realizing that he neither had happened in chèm walks on the moon in the student-neighbor companies.

- George, and you, then why run after me to the moon?

- I zashèl ask about Freddie - George explained. - You did not tell me where his new home; I do not even know on what this planet.

- Oh, quasars-raspulsary! - Eric slapped his helmet. - I do not know either! We must ask the Cosmos. But do not worry, Freddy exactly safe and feels good ... you just have to figure out where it is. Interestingly, and more I have not forgotten anything?



Eric Forgetfulness was legendary in chèm himself with lèkgostyu admitted. Vsè really important he is well remembered - for example, his theory naschèt universe - but could easily forget to eat lunch or put on socks.

- No, nothing, - I assured him George. - Here I am - forgot ... or rather, had not you something chèm ask.

- About chèm?

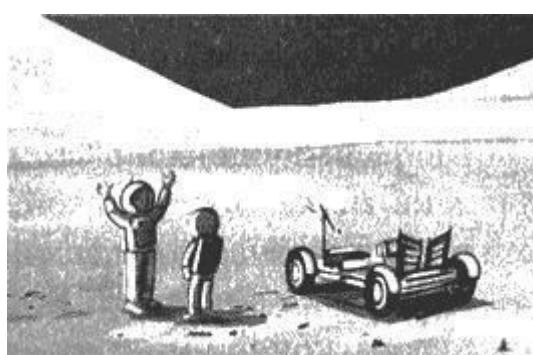
- About your work. Look at the very beginning of the universe - it is not dangerous?

- No, George, - tvèrdo Eric said. - This is not dangerous. More than that, I think it would be dangerous if we did not think about the beginning of the universe, if in questions about how we were and what we do in this world, we were content with guesses, not facts. That would be dangerous. And we are trying to understand how there was this wonderful, wonderful universe! - Eric obvèl arm around him, pointing to the ridge of lunar mountains, endless sky and chèrnoe hanging over the lunar landscape zelèno blue ball - the planet Earth. - We want to know how and why it came vsè: all those billions of stars, the endless and beautiful galaxies, planets, chèrnye hole, an incredible variety of life on Earth. To find out, we're trying to trace back the history of the universe before the Big Bang. It is engaged in cosmology - the science of the origin of the universe. The Large Hadron Collider will allow us to recreate the beginning of time, the first few moments, to better understand how the universe was created. It is not dangerous, but dangerous and very Collider. The only real danger comes from people who want to stop us. The question is why they do not want the mystery of the birth of the universe was discovered? Why do they need to make people afraid of science and eè achievements? That is, George, for me the biggest mystery. The question is why they do not want the mystery of the birth of the universe was discovered? Why do they need to make people afraid of science and eè achievements? That is, George, for me the biggest mystery. The question is why they do not want the mystery of the birth of the universe was discovered? Why do they need to make people afraid of science and eè achievements? That is, George, for me the biggest mystery.



- But what if they try to hurt you? Uchènym you and others?

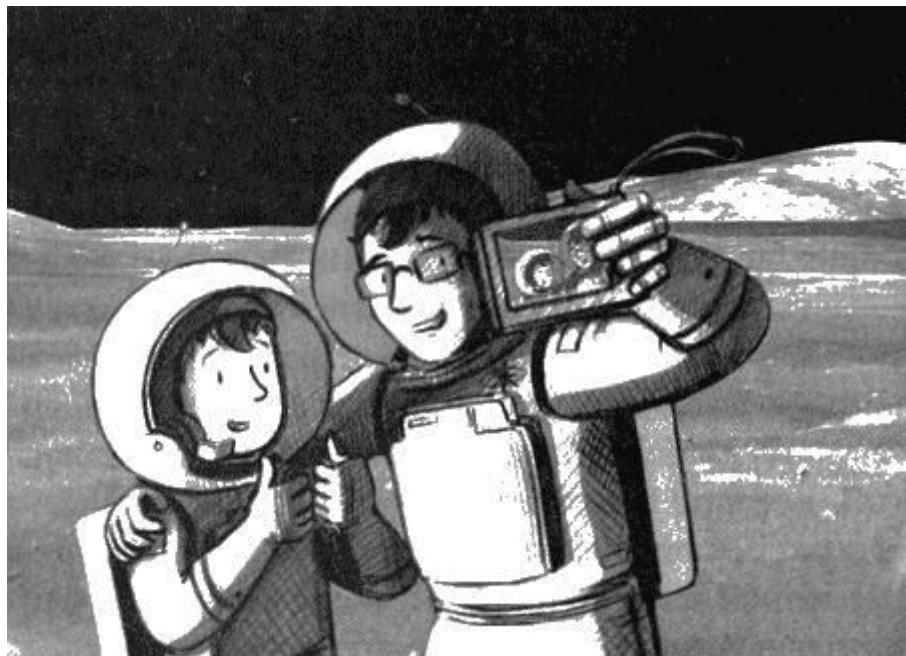
- Little hard to believe, - said Eric. - Finely fouling surreptitiously - is they can, but something serèznoe - hardly. They're cowards. Even their faces open their powder is not enough. So nothing to fear. A handful of losers - that's who they are. Forget about them, George.



George breathed a sigh of relief. So, do not worry - neither for Freddy, nor because of the beginning of the universe. Vsè not so bad! To have fun, he followed Eric bounced away for a shimmering portal. Usually, going to space travel, it closes the portal, but Eric was going to pop out for a couple of minutes, because podpèr door and old sneakers.

Almost before the portal Eric pulled out his camera space.

- It is necessary to take a picture! Attention, say cheese! Probably, it will be a bird lun! - He held out his hand and took a picture of himself and George, who had raised just two thumbs.



- And no one will notice that we have touched the rover? - George asked when Eric hid device.

- Only if you are very careful, - said Eric. - This part of the moon is not under constant surveillance, so I chose eè.

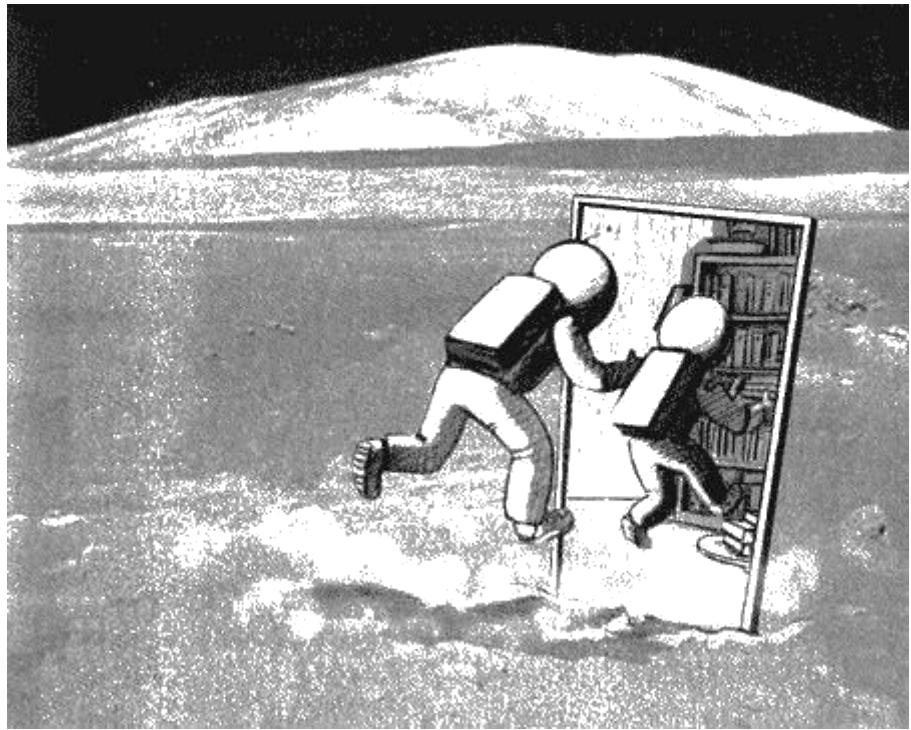
- Even if you will notice, it is unlikely to be angry - George reasoned. - We pulled the rover out of the pit, and he has earned from us again as good as new.

- Wait a minute. - Eric looked at the sky. - That this light over there - what is it? This is not a comet!

According to him chèrnomu sky flying point of light.

- And what?

- I do not know, but whatever it was, it is done by people, so there's nothing we hang around here. The stone in my pocket. Home is more!



They rushed to the portal, hurrying back to where it all begins their space adventures - in Eric's office.

The emergence of the universe

Chapter Five

Jumping into the office, where, as usual, prevailed inspired mess, Eric and George did not stay on his feet and rolled head over heels on the floor, tangled in suits - is, alas, not white.

- The portal is closed, - notified their Cosmos. - You are again on the third planet from the sun.
- Space, your IQ extends to infinity and even è limits - George said, knowing full well that the Cosmos loves compliments.
- Technically, this is not possible, - said the Cosmos, and its screen is flushed, as always, when a supercomputer embarrassed - but still have to agree with you.

As soon as George managed to get to his feet, he began to get out of the suit. Now the suit lying on the floor, resembling an empty caterpillar cocoon, from which just broke the will of the butterfly. Eric vsè eschè in the suit, carefully wrapped pieces of priceless Moonstone. And then the door could be heard hurried footsteps.



- Hush! - Eric hissed. - Hiding suit!

George shoved the suit in the closet. According to the Cabinet circled lunar dust particles.

- Hi! - Shouted Eric unnaturally cheerful voice. - Is that you, Susan?

After the last adventure, when Eric, George and Annie almost stuck forever in zvèzdnoy system at a distance of forty-one light-year in the depths of the Galaxy, Susan is strictly prohibited children to accompany Eric in his space travel.

- Yeah, - Susan responded, but the office was not included - eè steps retreated in the direction of the kitchen. Then came the stamping, announced that Annie is also at home.

- It was superkruto! - She said, bursting into the room. - Dad, you gave me a skateboard on the day ro ... Oh, Dad, why are you in the suit? And George here ...

- Tm-sh! - Eric put his finger to his lips.

- Can not be! You could not ... Really?! You are in space without me?! - Annie gave George a withering look.

- You ride a skateboard - politely reminded George. - It's been superkruto! It is much better than on some kind of moon.

Annie seemed on the verge of vzorvètsya. Eric puzzled looked from neè George, as if they were aliens and speak Vulcan, and he had forgotten connect your translator.

- Well, I have time to go home, have dinner, - said George. - Bye, Annie! Eric, Susan, goodbye!

When George was already at the door, Susan called after him:

- Do not forget, George, tomorrow you idèsh us a lecture! Your ticket for me.

The next day, shortly before the start of lectures at the University of Eric George, as it was agreed podoshèl to the neighboring house.



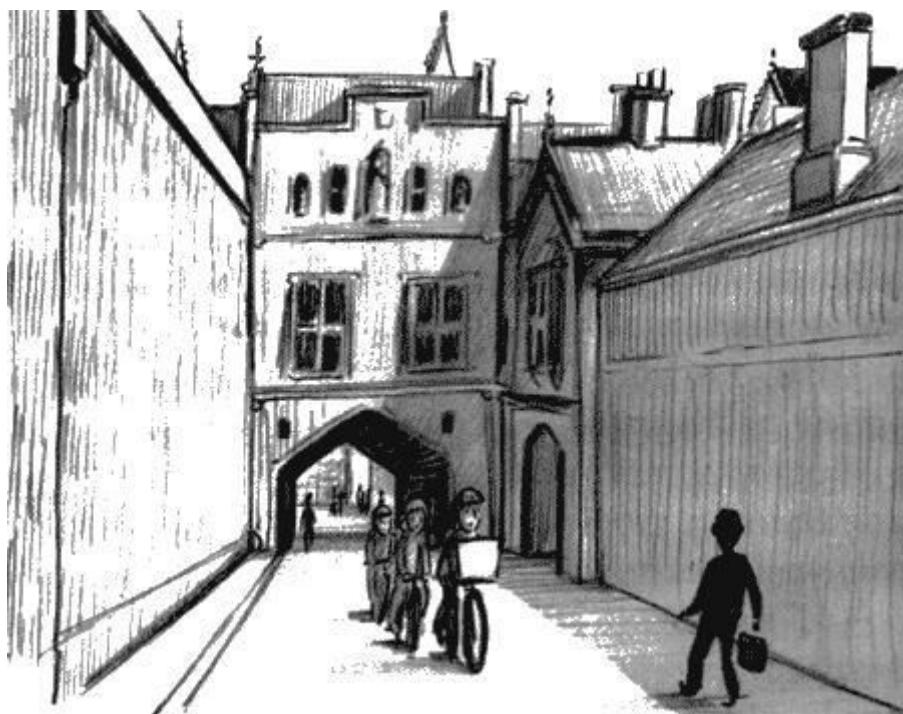
- And as it was on the moon? - Angrily asked Annie, as they zastègivali bicycle helmets. - Well, can not say - I bet a trillion pounds, there is a longing zelènaya.

- But you went to ride! - Outraged George. - With Vincent. Me, you, by the way, was not invited.

- I do not know what you're interested - Annie snapped, jumping on his bike. - You never said you wanted to ride on the board. But you knew I wanted to go to the moon! Stronger than anything in the world! Of the entire universe I most want to go to the moon! And you poshèl there without me. A friend called.

What injustice, George thought. And then she is so angry? What a difference her where he was and what he was doing, if she herself while having a great time in the company rezhissèrskogo son? But George did not ask these questions Annie. He silently wound circles in front of the porch until Susan came with a large cardboard box, which she could hardly attach to the handlebar of your bicycle.

- Vperèd friends! - She said cheerfully, as if not noticing that eè daughter of George and hard do not look at each other.



Vtroèm they drove into the town center. Faculty of Mathematics for centuries housed in an impressive building in a narrow street in the heart of the ancient Foksbridzha. However, turning to the cycle path on the street, they found that it is impossible to pass on - it is crowded with people.

- Who are these people? What are they doing here? - Annie was amazed.

- Let's leave the bikes here - proposed to Susan, pointing to velostoyanku - otherwise we will not get.



Parked bicycles, they began to squeeze through the crowd to the stairs leading to the double-wing glass doors on either side of which rises a column. Before the door hovered University guard, anxiously glancing at the audience.

- Wow, how many people came to the lecture your dad! - George whistled. - You see, everyone goes to the same place we are.

The crowd buzzed and pressed in, trying in an old stone building, on the portico of which was carved an inscription in Latin: PER ASPERA AD ASTRA - «Through thorns to zvèzdam».

- Why did it happen? - Annie wondered, trying to keep up. - Why suddenly so many people want to hear, as the Pope says about all the math?

Ducking and dodging, they finally got to the door, but the guard blocked their way.

- At the lecture is not to start up! - He snapped.

- Excuse me, - politely said Susan. - I am the wife of Professor Bellis, and it is his daughter Annie and è friend George. We arrived early to help prepare the room.



- Oh, I'm sorry, Ms. Bellis, - guiltily proiznès guard. - In general, we at this faculty do not keep guard, there is always peace and quiet. - He took out his handkerchief and mopped his brow. - But your husband seems to be a real celebrity.

Susan and children looked. Suddenly on the far side of the crowd started a commotion.

- Down with the villainous uchènogo! - I heard a shout from a group of people in chèrnom, with masks on their faces. - Do not allow science to destroy the universe!



At the guard's face showed confusion.

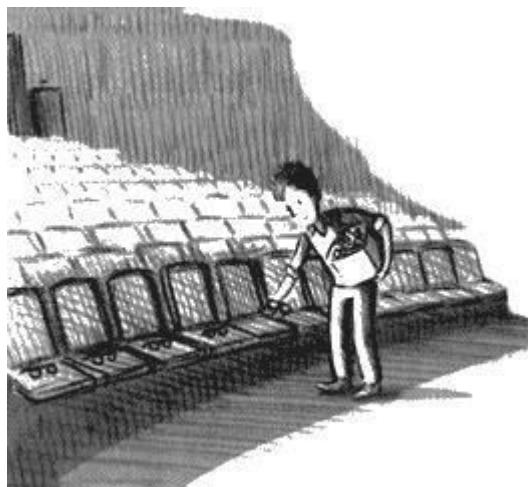
- Department of Mathematics. Send reinforcements! - Quickly said he was in the radio, and then turned to Susan: - Come on, Ms. Bellis. - He opened the door and let Susan and children. - And with these we razberèmsya, - he grumbled. - We will not tolerate such Foksbridzhe. Nothing of the sort had happened here and will not be!

Chapter Six

Susan quickly dragged crazed children through the lobby and led into a large lecture hall, reminiscent of a cinema.

- Forget about the fact that it was on the street, and here it lay on the chairs - Susan said quietly and handed the children on a cardboard box with chèrnymi points.

Annie and George made their way between the rows and each seat put glasses. Eschè bit - and vsè will be ready for the first public lecture of the new professor of mathematics, Eric Bellis, in a very old and very famous Foksbridzhskom University.



Annie still trembled slightly.

- Mom, it's vsè mean? Maybe these people are of a secret organization, about which we told Dad? TOBACCO?

- It's hard to say for sure - Susan said softly. - But, apparently, they do oppose the father's experiments on the origin of the universe. They believe that such experiments are too dangerous and that uchènyh must be stopped before they went too far.

- But that's stupid! - Outraged George. - Experiments which holds Eric, are perfectly safe. And they can really show us how the universe! It's like ... like the last piece of the puzzle that uchènye collected for many centuries! You can not throw this detail, and not seeing the whole picture!

By this time they had already spread throughout the audience points, down from the last row to the first.

behind the last row of a sudden the doors flew open. The tall boy boom pronèssya the hall, jumped off the skateboard, landed next to George, picked up the board - kolèsa eschè spun - and triumphantly exclaimed:

- Both on!

- Vincent! - Annie yelled enthusiastically. - I Do not know what you pridèsh. Well, when there are at least one of each! - She said emphatically, defiantly looking at George.

- And I thought, here no one is allowed, - grumbled George.

- Just started to blow, and I clocked - Vincent pointed to his skateboard - and immediately proved to be ahead of the queue!

- And those in chèrnom - they're gone? - Annie asked.

Hall, meanwhile, began to fill: those who wish to listen to the lecture took place, with curiosity and perplexity considering tèmnye points.

- Yeah, pull up, - said Vincent. - Psychos. What does that even happen? "Villainous uchèny"! Here are idiots!

Annie looked at Vincent from the bottom up, and smiled so that George longed dèrnut eè hair - just to make this smile with neè slipped.

- One of them, by the way, tried to talk to me - added Vincent, deftly tossing board left foot.

- And what did he say? - George asked.

- I do not really make out - Vincent admitted. - At the same mask he was nèm, and sounded as if he had in his mouth a wool sock. But, in my opinion, he has named.

- What? - Interested in George.

Vincent looked at him.



- Honestly, dude - he proiznès - it seems that it was twoè name. It's kind of like "George," he said.

- But if he protests against science at George chèm here? - Annie asked in confusion.

- Well, maybe he did not say "George" - reasonably assumed Vincent. - Maybe it was just some similar word. Or, on the idiots in chèrnom language it means something else. That's my dad, for example - he screwed up as if by chance - as soon as the premiere of the film, so necessarily a problem because of the wacky fans. What are you a celebrity, if you do not have at least a couple of half-witted fans? It is as if to say so, the inevitable side effect. The downside of fame.

- Premiere of ... - dreamily repeated Annie. - Stunned!

- Yeah, - absently said George. - Premiere of the film ... stunned ...

He was not mimicked by Annie - just mechanically repeated eè words, think about why would someone from these geeks mentioned his name. Surely, he thought, there was a link between the demonstrators and the strange gathering in an abandoned basement under one of foksbridzhskih towers. Who would have guessed eschè to call Eric "villainous uchènym" as not these faceless people chèrnom who think that because of his experiences universe can in a minute shatter? But, on the other hand, what they care about, George? ..

In the hall several times blinked light, and a mechanical voice, in which George and Annie recognized the voice of the Cosmos, invited all to take their seats in places.

- Ladies and gentlemen - continued voice - as well as children and space travelers, today you will be an adventure, what in your life did not yet happened. So, ladies, gentlemen and young space explorers, prepare for a meeting with his universe!

And at these words, the hall was plunged into darkness.

Chapter Seven

George, Annie and Vincent quickly took their seats in the front row at the edge. The last chair, next to George, remained empty. It was the only available space - the room was packed. Finally everyone was seated, and there was silence.

- Dear space travelers! - Voice boomed over the heads of the Cosmos. - We have to overcome billions of years. You are ready? Ready to be launched in the beginning, ready to learn why and how vsè started? Then please put tèmnye points! You will see something dazzling, so watch out sight!



Above the heads of the audience in the darkness there was a white point of light, unbearably bright. And then George said that at the empty space next to him someone sits down. Just at this moment Cosmos lit room a bright flash, and George managed to see

to the neighbor completely unusual spectacles: stekla they were not transparent and not temnye and bright zhelye.

Previously, George saw such points only once in a lifetime. When he and Annie and Eric pulled from the Cosmos chernoy holes on Eric somehow they had the same zhelye points. It was not his glasses, and the question of how they found themselves in the supermassive hole chernoy, remained unanswered.



- Where did you get those ... - George was started, but his words were drowned out by the voice of the Cosmos:

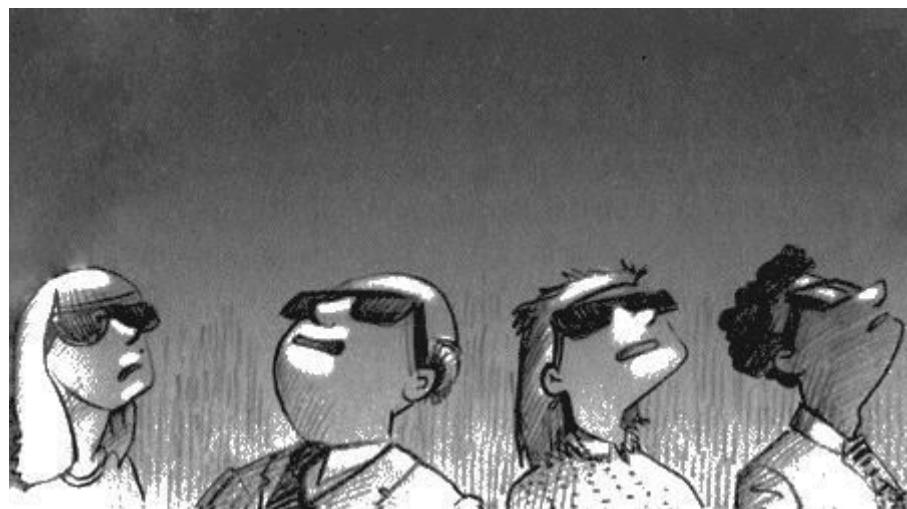
- Our story begins thirteen point seven billion years ago. - Above the hall still hanging luminous point. - It was then that arose vsè that we'll see in the universe, and vsè what we do not see, because it is invisible. It appeared as a tiny point is much smaller than a proton. The space was too tiny, so vsè in nem had to be tightly compressed. If you look back so far that there's nowhere, it turns out that physics can not describe exactly what was happening at the time - was too unusual conditions. But, apparently, the space, as we know it, began with a tiny point of thirteen point seven billion years ago, and then began to expand.

The point of light suddenly began to swell like a balloon. This ball was slightly transparent over its entire surface vortex circled colorful patterns; but inside, it seemed, there was nothing.



- This hot broth - continued Cosmos - and becomes our universe. Note that the universe - only the surface of the ball; It is a two-dimensional model trèhmernogo space. When the ball rastèt, its surface expands and vsè that it has stretched. Along with space and time began. This is the traditional picture of the Big Bang, in which vsè, including space and time, there is at the beginning of the history of a sudden.

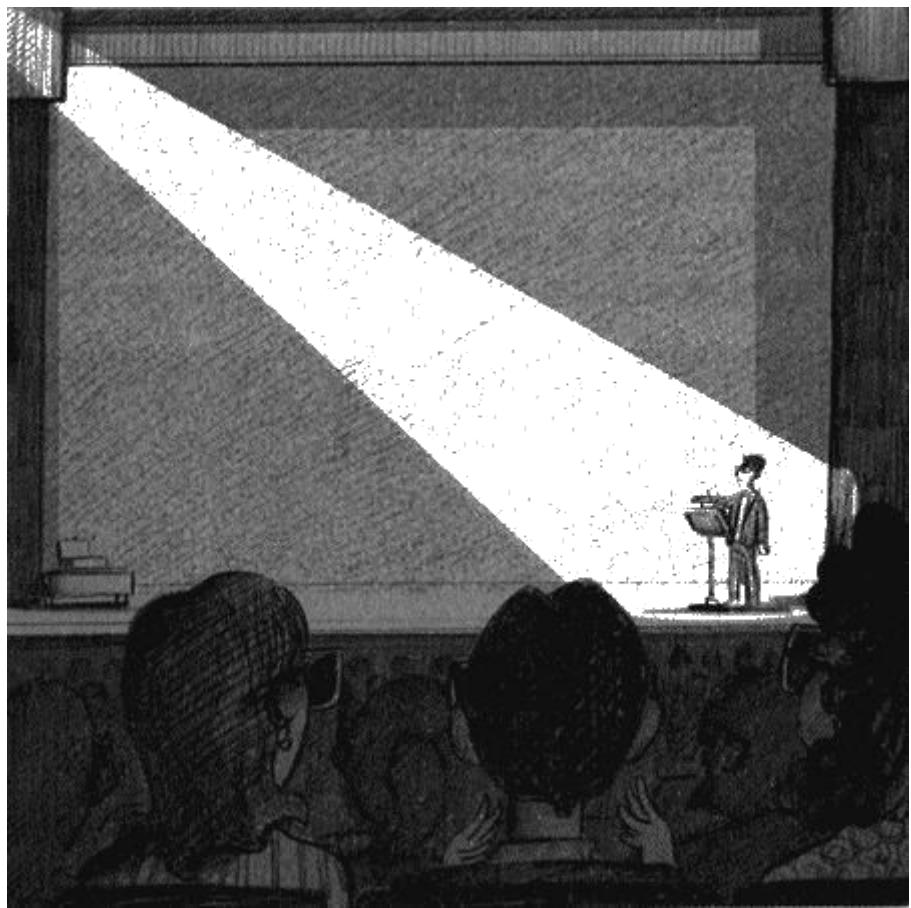
Bowl over the heads vsè swelled and finally burst. Snake bright patterns intertwined, then faded and vanished like a cloud, leaving the audience in the dark. Everywhere they swept izumlènnye oohs and aahs.



A moment later, chèrnom ceiling began to emerge and begin to move the pale light spots; taking the form of galaxies, these spots are expanded and removed from each other until they disappear one and all - and the hall again swallowed by darkness.

- But is vsè this was really the case? - Once again came the voice of the Cosmos. - Some uchènye doubt that the Big Bang was really the beginning of history. We do not know for sure, but let's try to get involved in the history of the universe in just a tiny fraction of a second after the entire observable universe was compressed into extremely small, smaller than a proton, space.

- Imagine ... - proiznès another voice, and a strip of light snatched from the darkness of Eric, who was standing on the stage and smiled broadly. Hall burst into applause. - Imagine that at this very moment, at the beginning, you are sitting in the universe ...



Big Bang - lecture

Chapter Eight

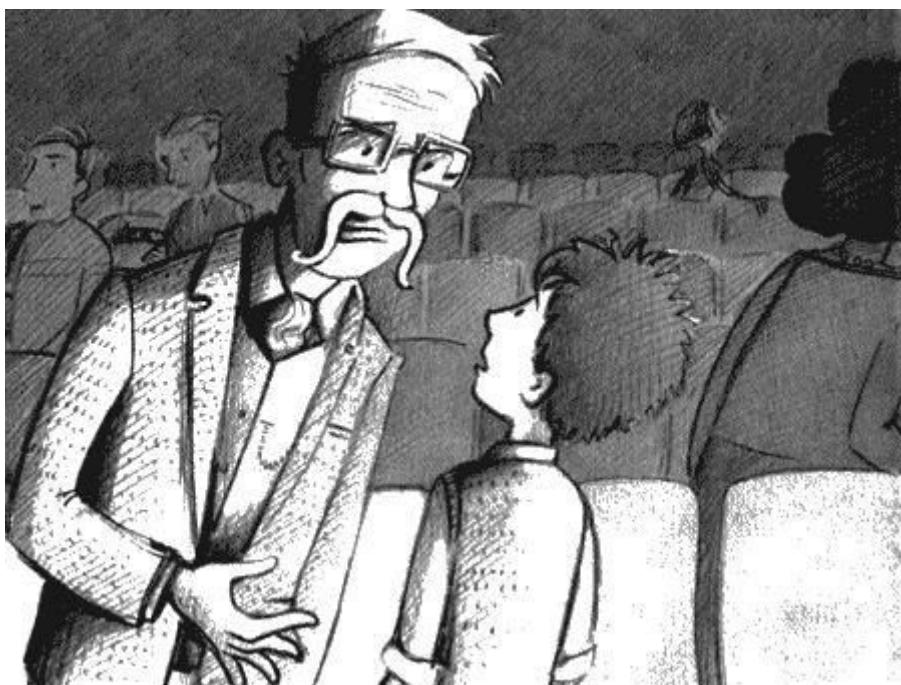
When Eric graduated from a lecture hall and zazhègsya light, students jumped to their feet and applauded wildly. The ovation lasted a long time. Smuschènny Eric weighed several bows awkwardly jumped off the stage into the hall, where he immediately found himself in the ring enthusiastic fans, and photo and video cameras recorded his every move. The ring around it was so dense that Annie and George did not even hoped to break through to Erica. On the contrary, the crowd pushed into their vsè away from him.

Annie, flushed with excitement, and then repeated in the space: "Stunned!"

- That was awesome! - Once again it has issued, referring to Vincent.

His appearance was that woozy, as if he had looked into the heart of the star burned down and now can not return to reality on planet Earth.

George heard behind him a polite but tvèrdoe cough and turned and found a man sitting next to him at the lecture. He noted that this old man, quite gray, with long drooping mustaches. The old man was a tweed three-piece suit, dangled from his waistcoat pocket watch chain.



The old man grabbed George's arm.

- You're sitting next to his daughter Erika, - hot shèpotom he said. - Do you know Eric?

- Yes ... - George recoiled long gray mustache almost touching his face.

- What's your name?

- George - George replied, continuing to retreat.

- I need it! - Asked the old man. - I have to talk to him urgently! It is very important.

The old man were now the most ordinary glasses. George even thought I do not whether it zhèltye stèkla imagined.

- Who are you? - He asked the old man.

He frowned:

- Do not you know me?

George frantically recalled. whether he met this man before? No, not likely. And it was in vsè nèm something vaguely familiar.

- You've heard me the truth? - The old man insisted. - Come on, my name, speak!

George does not just brains dislocated, but could not remember who it could be. He shook his head apologetically.

- Really? - The old man's face fell in disappointment. - And in the old days I was known to all. About my theories knew every student. Are you really not heard about Professor Zuzubine?

George made a sad face. He was terribly embarrassed.

- No, Professor Zuzubin. Sorry ...

- It is unfortunate to hear that - sadly said the old professor. - I'm, you know, was a mentor Eric.

- Exactly! - George sighed with relief: at last he could say anything good. - That's where I saw you - on the student's photo Erika. You - the one his teacher!

Professor Zuzubin did not cheered at these words.

- Teacher Erica ... - bitterly proiznès it. - So, this is how I will remember ... That's how I will think about if I do not ... - He interrupted himself in mid-sentence. - Okay, do not pay attention - he said emphatically. - Tell Eric I'll wait in his office. Hurry up, George!

Break through the crowd to Eric was not easy. "Do not push!" - Angrily hissed at George, but he stubbornly moved vperèd. Eric, meanwhile, disabled Cosmos from the network, closed it and took under his arm.

George finally got to Eric and whispered in his ear:

- There's a professor Zuzubin. He wants to talk to you. He said that this is very important.

- Zuzubin?! - Izumlènno asked Eric. - Here, in this room? Are you sure? The same Zuzubin?

- Yes, Zuzubin - George confirmed. Vsè this time it tried to push and push, but he remained undaunted.
- He zhdët in your office. He says it's urgent.

- I'm on my way! - Eric loudly clapped his hands, and the noise in the room fell silent. - Thank you for having listened so attentively - he thanked his fans. - A month is a new lecture
- Come, please, we'll talk about holes of ferrous and end of the universe. Good evening everyone, ladies, gentlemen and children!

Under another applause Erik left the room. George shèl frowning after him. There was a professor Zuzubine something - maybe glasses with zhèltymi stèklami, maybe the tone in which he proiznès name Eric - which is why George cat clawing at heart. Whatever is meant for Erica meeting with this man, he, George, must know about it.

- What it is? - Professor Eric Zuzubin laid before some picture and pristuknul on the table with such force that the pile of books trembled, and with unfinished cup of tea rattled plaintively. - What, I ask you?

- Professor Zuzubin - Eric mumbled, blushing and shuffling from foot to foot, - I ... I ...



George stared at Eric's mouth agape. He never did not yet seen the famous uchènogo scolded like a boy.

Professor Zuzubin stood silently, expectantly looking at his former pupil.

- Eric Bellis - proiznès he finally - I know that there has not been without you. Kindly explain, please, what it means vsè. I am waiting.

George stood on tiptoe, trying to see the photo. On nechètkom image was visible only grayish surface pitted with craters, and the side - two vague figures in spacesuits.



- Oh-oh - Eric whispered.

- That's right - "oh-oh" - pripechatal Zuzubin.

- In vsèm my fault alone - quickly said Eric. - George here at chèm.

- George?! - Zuzubin exploded. - So, now we are children to drag him into space? I wonder what's next? Excursions on the moon for kindergarten? What do you think, I wonder?

- It vsè because of me. - George gamely stepped vperèd. - I poshèl for Eric to the moon, because I wanted to ... I had to ask him one question. He did not call me, I'll poshèl. - Not having time to finish, George realized that only made matters worse.

- Then - slowly she hissed Zuzubin - you left open portal without supervision, enabling the child to use it on their own and go into space? You know how it is serèzno?

- I am very, very sorry. - Eric looked abashed. - I had no idea that the satellite will fly in this area ...

- You showed unacceptable carelessness - cut Zuzubin. - This picture was sent to me Dr. Jiang from the Chinese branch of the Brotherhood of scientific research for the benefit of mankind. He wondered how the Chinese satellite was able to get a snapshot - a real shot with the date and time - two astronauts on the moon, if the last manned spacecraft have been there in the nineteen hundred and seventy-second year?

- But then, it appears vsè not so bad? - Hopefully George asked. - If they did not see the portal, then the Cosmos is not declassified, and they decide that this photo - just a mistake.

- Just a bug?! - I hoisted Zuzubin. - If someone thought up by a supercomputer to walk on the moon and caught him there, do you think this is just a mistake, do not worry?

- Do not yell at George! - Eric began to rebound. Taking off the table one of his many cups he drank cold tea - it seems that it gave him strength. - Yes, I admit that we walked on the moon with the help of the cosmos, because I'm working on a theory and I needed a piece of lunar soil to test the hypothesis. But this vsè! There is no longer talk about.

- Nothing like this! - Zuzubin flushed. - It's very even have to talk about chém. So far this photograph kept in strict confidence - thanks to Dr. Jiang - but if proizoydèt leaked, it would be a disaster for all of us! You know perfectly well that the cosmos can be an invaluable tool of scientific inquiry only as long as its existence is kept secret. You know what can happen if a nèm know the whole world. You entrusted with the honor of being the custodian of the greatest computer in the world, and you're ... you're ...

George seemed that Professor Zuzubin would burst with rage. But he pulled himself together and continued more calmly:

- And most importantly, vsè it happens in such a difficult time for the Brotherhood ..!

Brotherhood of scientific research for the benefit of mankind consisted of the best and most worthy uchényh united for the sake of science was used exclusively for the benefit of mankind, and not to harm him. Not only Eric, but Annie and George were members of the Brotherhood. George vowed uchénogo shortly before he was to save from Eric chèrnoy hole.

- ... You must have seen a demonstration today! And you can not fail to understand that the secret antagonists of the Large Hadron Collider - Zuzubin diligently uttered these words - now just gaining momentum.

And what he is trying so hard, George thought. Thanks to direct - TOBACCO. It imechko them perfectly.

- They grew bolder, - continued Zuzubin. - Today they ventured to appear in a public place - before such was not. They know that in the world of science is vsèm vsè great suspicion, and it pridaèt them confidence. And if because of your irresponsibility become aware that we have a secret supercomputer, people will be interested in what eschè we hide from them? Perhaps, they say, the collider is indeed very dangerous. Do you realize what would happen if we banned experiments? Our scientific career pridèt end. Science itself pridèt end!



Eric seemed on the verge of tears. Never eschè George never seen him so miserable.

- What should I do? - Eric asked.

- We called an extraordinary council of the Brotherhood - Zuzubin said, consulting the silver watch, which he izvlèk from his waistcoat pocket. - You immediately go there together with the Cosmos. It will examine all the teams made supercomputer, while he was on twoèm care, and decide whether they were justified.

George and Eric silently gasped. Brotherhood uchènyh scan Cosmos Magazine and finds out that recently it has been used to move the pigs!

- You pridètsya explain their actions - continued Zuzubin.

- If you get ... - I murmured Eric, vsè eschè thinking about Freddie.

- And then the Brotherhood will decide whether you have the right to remain the custodian and trustee of the Cosmos. Transport I have caused.

Eric turned pale:

- You want to say that I have taken away the Cosmos?

- They will not do! - Shouted George. - It's not fair!

- Let's see - Zuzubin said. - You go, Eric. The car drive up to your house.

- And where are going to take me?

- To where do you spend your main experiment.

- I'm going with you, - said George. - I'm also a member of the Brotherhood and have the right to ...

- Eschè what was missing! - Thundered Zuzubin. - You ostaèshsyia here. This is not a toy.

- Professor Zuzubin rights - quietly said Eric. - This does not concern you, George.

- But where are you going? - George insisted. - And when vernètes? Where will this meeting?

Eric sighed.

- In the Large Hadron Collider - just as quietly, he said. - Where we are waiting for all the answers.

Vtroèm they silently left the room and headed for the exit. However, looking back on the porch, George saw through the glass door that Zuzubin not idèt behind them and down the stairs leading to the basement.

- Eric - George asked as uchèny opened bicycle lock - and that in the basement of this building?

- In the basement? - Eric asked absently. - I'm not going down there with since he was a student.

- But what's that? - I would not leave George.

- Yes dump rubbish, I suppose. Old computers and vsè is. I do not know! - Eric shook his head. - Sorry, George, I have no time for that. Seek his bike and went home.

Chapter Nine

At home they were met by Eric beaming Annie.

- Dad, Vincent said that you were great! You are a real star!

The festive mood did not last long. Susan took one look at Eric and George to realize that something has happened. She stole Eric's office and closed the door, but through the thin walls of the children vsè still heard every word.

- I do not understand. How are you now going to Switzerland? After the semester has just begun. How are your students? And how do we, Eric? You promised we'd be together to prepare for our wedding anniversary! We long ago vsè planned. Can you at least once in my life to bring me?

- What happened? - Annie whispered.

- When we were on the moon, the Chinese satellite and made us zasèk Photo - said George, too shèpotom. - The Chinese have sent a picture that one professor, quite ancient, and he got very angry, and now your dad's in trouble. He pridètsya go to the Large Hadron Collider, right now, and explain how it happened, and there they will decide whether he can be left at the Cosmos.



- They can take away from us Space?! - Annie whispered in horror.

- Susan, - heard from the side of the wall - I'm sorry, please. It's my fault.

- You promised, - said Susan. - You promised me that you will no longer turn our life into bedlam. Annie and George did not want to listen, but every word, as luck would have sounded very otchètlivo.

- If I do not go, I will select exactly Cosmos - proiznès Eric.

- Space! - Susan mimicked. - How did he make me sick! I do not want to hear about nèm more! Some trouble for this computer.

- It is not, - timidly said Eric.

Annie ran out of the kitchen and rushed into my father's office.

- Stop! I can not stand it! - She cried, wringing her hands, as if on a stage. - Do not quarrel! Stop immediately!



George stood forlornly in the middle of the kitchen. For the first time since that day, he met with the neighbors, he desperately wanted to be not at home, but at home, with their family parents. Let sestrènki yell, let mom prepares their weird vegetable muffins - and Eric, Annie and Susan even understand each other without it.

- Annie, calm down, - said Susan. - You have nothing to do with chèm. This only applies to us with the Pope.

- They will be taken away from us the Cosmos, is not it? - Annie asked Eric, who, according to his view, was
B this moment somewhere else - probably traveled through the universe.

- What? - Eric winced, as if waking up.

- So you did not hear anything ... - obrechènno said Susan. - I'm talking to you, and you in this time of thinking about science. - Voice eè suddenly became empty and in exhausted.

- I ... well ... - Erik clearly had nothing to say.

- So let it be taken away from you! - Blurred Susan. - Maybe without that damned computer, we would once again become a normal semèy!

- Mama! - Annie horrified. - You what?! You do not think so!

- Very even think! If the Brotherhood uchènyh not destroy the ill-fated car, I'll kill myself eè!

After these words in the house was very uncomfortable. Eric, stomping loudly, went upstairs to pack; Annie had come with him, to go advising what to say to the Brotherhood.

- Annie! I'll take care of itself! - Donèssya to George's voice Erica, unusually loud. - Mind your business svoè!

George was still standing in the kitchen did not move, as if glued. He heard Annie ran down the stairs and broke into Eric's office and slammed the door. In the house reverberated loud sobs.

Susan gently knocked on the office door.

- Annie ...

- Get out! - Annie screamed. - Hate you! All you hate!

Susan returned to the kitchen - pale, stretched out face.

- Excuse me, please, George, - she said wearily. - I'm very awkward.

- Nothing, - said George.

But vsè was a very "something". George had never heard adults swearing so, and his heart was bad.

- You're probably better now to go home - Susan said softly.

On the threshold of the kitchen there was Eric.

- Here, take it. - He gave George a cage with a hamster Busik. - Eschè And here it is, in the memory. - He took off his backpack from his shoulder and a small voice said: - In case of a sudden, while I'm gone, they decide to confiscate all my cosmic things.

That looks out of a tightly packed backpack, looked like a duvet, had once been white. But George knew exactly what it was: a spacesuit!

- Are you sure? - George asked, throwing a backpack on his shoulder and comfortably intercepting cell.



Minivan was not a normal hamster. Strictly speaking, he was not at all hamster. He was the only one in the world supernanokompyuterom. Created by Dr. Lynn, a former colleague Eric, this Busik was almost as powerful as the Cosmos.

Anyhow, in theory. Because - and this was a problem - practically Eric had no idea how to manage it. Nanocomputers had the appearance of normal furry animal. Control Panel, it did not have, at the command he did not react. Without its creator, Dr. Lynn, Busik was completely useless. Eric had hoped to merge it into the net with the Cosmos, but this plan failed. Busik peacefully lived in a spacious cage, brushed mustache slept so running in the wheel - not the most decent way of life for a computer, which occupies the second place in the world by intelligence ... But as long as Dr. Lynn vernetsya from some far-Institute of Physics, Eric could not do anything with Busik. Is it to protect it - and keep secret.

In addition to Dr. Lynn only Eric and the children knew about Boucicaut. And it means, George suddenly realized that no one in the Brotherhood are not even aware of the existence of the second supercomputer. They only know about the cosmos.

- Bye, George, - said Eric. - Good luck!

- How's Annie? - George asked. The sobs had ceased.

- I'll tell her to write you a message, - promised Susan. - When we're privèdèm myself up.

George came out of the neighbor's kitchen into the garden and climbed through the hole in the fence. The home of a friendly light in the darkness familiar dim light. Environmentally friendly solar power generator, assembled from scrap materials dad, gave not a very strong current, and the battery quickly sat down.

George proshèl into the kitchen, where his mother, Daisy, whipped vegetable purées for babies. From the house smells he warmed his heart. My mother turned to him and smiled.

- You already prishèl? I mean, you vsè well? - She asked, looking at the backpack and a cage with a hamster.

His throat was stuck George com. He nodded.

- I'm so glad - affectionately said Daisy. - I understand you are now hard at home ...



The twins were sleeping right there in the kitchen, in reed baskets; tèmnye very long eyelashes cast shadows on the pale pink schèki.

- When they are a little older, - mother hugged George - will become easier. And quieter.

One of the girls - George vsè eschè bad distinguish them - published in a dream a quiet chuckle, like a crystal bell rang zvèzdnaya or a speck of dust fell to the ground.

- When they grow up, you simply will not believe what they once had. I can not imagine that we ever lived without them.

Terence - dad - also went into the kitchen and stood in the door proème, looking at his wife, son and daughters. Before George suddenly realized: for mom and dad never said a word, he holds the neighbors much more time than at home - and he felt that parents loved eschè stronger.

- Well, what do you prishèl, George - my father said. - We missed you. Let me help. - He took a cage with a hamster and began to look at the second most powerful supercomputer in the world, which, like the twins, slept peacefully. - Who is it?

- It Busik, - said George. - Can I have it remain?

Parents smiled.

- Of course you can! - Happy mom. - This handsome. And less porosènka way.

- I'll take it to you, - my father said.



George climbed the stairs to his room and stretched out luxuriously on the bed, do not forget to leave the curtains schèlochku - in case you suddenly prosnètsya night, but the sky just fly to a meteor ...

Chapter Ten

In the stillness of the night before home Erik stopped long chèrnaya brilliant machine. Out of the car came out shofèr and rang the doorbell. Eric, very pale, was standing in the hallway, clutching a briefcase with the Cosmos. On the threshold he turned. Susan and Annie rushed up to him and hugged.

- Well, I must go. - Eric's eyes burned with a white face, like two dying stars.

- Good luck - quietly said Susan. - And I ask you, Eric, be careful. Please! There because there are bad people, and they do not like.

- Come on, vsè be tiptop! - Eric tried to speak cheerfully. Now, when he left Susan and Annie and had forgotten him angry. - I'll be back in a couple of days, and together we posmeèmsya on this story. It's just a stupid misunderstanding; I will explain how it happened, and vsè immediately settled. You are bored and do not have time, I'll be home. Maybe even to the anniversary.

- So far, Dad! - Lower lip trembling Annie.

- Professor, we should, - urged the driver. - Vsè painted by the minute. Get in the car, sir.

Eric left the house and climbed into the car sparkling. The driver closed the door gently behind him. Stèkla windows were zatemnènnye, so that neither Annie nor Susan saw Eric's cheek, sitting alone on a luxurious leather seat with a computer on his knees, slid tear.



The car, humming a powerful engine, sped through the evening city. In silence they drove to the airport. It was a small private airfield, send and receive just a couple samolètov day. The driver said something to the guard, the gates opened and the car rolled on lètnoe field.

On the field, in the bright light of the full moon waiting for a small silver samolèt. The car drove straight to the ramp. Climbing aboard, Eric found out that he - the only passenger.

A minute later the cabin raznèssya pilot's voice:

- Good evening, Professor Bellis. We are honored to welcome you on board our aircraft. After about half an hour we land at an airfield near the Large Hadron Collider. Kindly fasten your seat belt.



Samolètik, picking up speed, slid on vzlètnoy band, easily lifted off the ground and fixing his nose up at the sky, ponès Eric meet fate - and perhaps towards the collapse of his scientific career.

Expansion of the universe

Although George fell asleep as soon as his head touched the pillow, he slept long. In just a few seconds - so it seemed to him - he abruptly sat up in bed, covered in a cold sweat. George had a bad dream, torn and confused. On dal Ye with grave koy planet over which shone zel Ye with grave noe sun, people ch Ye with grave rnom chasing Freddy in the bush orange grass and cried: "Down with the villainous pig" George wanted to stop them, wanted to cry, to leave Freddie alone, but from the throat struggled just scared wheeze.



While George sitting on the bed, trying to catch his breath, he was struck by a terrible thought. If Eric vernetsya without the Cosmos, he, George, never know, which is now home to Freddie! Eric did not tell him where he went boar, because he did not know it, and only going to find out. If the cosmos is lost to them forever, you and Freddie also lost. What if the computer sent him to the most distant regions of the universe? Then Freddie vsè carried away farther and farther away from him. So George would never see each other, and to blame only himself in this. He, and he alone had to take care of Freddy!

The dream vanished. George became unbearably sorry for Freddy, and along with himself. Maybe from a glass of milk with cupcake him feel better? He slipped out of bed and tiptoed breathlessly walked down the stairs. Not only had enough to wake the babies - parents just do not be happy with this.



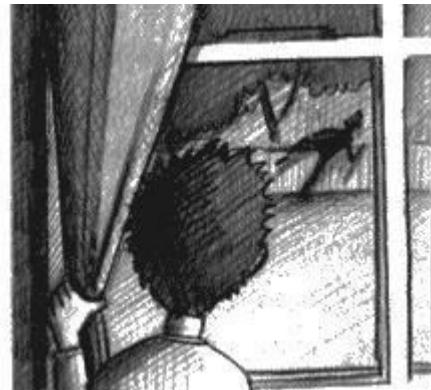
In the middle of the ladder, George suddenly heard sounds. They came from below, from where no light was on, and, in theory, there was not a soul. George froze. To continue the way it was terrible, but he did not want to go back, fearing an unexpected noise to attract attention. He pressed his back against the wall and waited. When he had already decided that he vsè heard, the sounds were heard again. These were the steps, quiet but distinct; someone snuck downstairs as he was. Outside, the full moon was shining, è

silver light streamed through a first floor window. From where George stood prigvozhdènny fear to the wall, he was perfectly visible long shadow that slipped past the stairs and disappeared in the direction of the kitchen.



Barely audible creak the door leading to the garden, and like a cat cautious steps departed away.

Quietly, trying not to make a single sound, George returned to the bedroom and pressed to the window. In the moonlight, he saw tèmnaya shadow darted to the far end of the garden, jumped over the fence and disappeared, as if melted. His head was spinning George, heartbeat echoed in his ears. He rushed to the parent's bedroom and began to shake the pope's shoulder.



- Hrrgrr! - Prohrapel parent and rolled over.

- Dad! - Loud shèpotom called George. - Wake up, wake up the same!

- Grrrmf! - Terence turned and spoke in a dream. - Disable the bomb! Save the whales! Do not eat meat!

George again, shook him by the shoulder.

- Prohibit the whales! I do not have a bomb! Save the meat! - Terence muttered. Daisy softly snoring beside him, with his head under the pillow.

Finally Terence awake.

- George? What? Girls? Again want to eat?

- Dad, the house was someone! I saw how he ran over the fence!

Terence groaned and swung his legs out of bed.

- What is there to steal? - He grumbled. - I wish I could see what he was naydèt ...

Vsè He still went down, and when he returned, his face was serèznoe though vsè eschè and very sleepy.

- The back door was open - he told George. - I èè locked. But maybe it's just a cat ran? Okay, George, go to bed until the baby did not wake up.

No sooner had he said as he heard a whimper - first from a cradle, then from the second.

- Well. Waited - summed Terence. - Go to your son. Good night.

The next day at school, George eyes closing and his head drooped to the desk. Dad decided not to declare to the police about the incident the night - because the house nothing is missing, and in general he was sure that just an animal - probably a cat - wandered into the kitchen in search of food.

George did not argue with the Pope, but he had a different opinion: the steps that he had heard during the night, though, and almost silent, for cats were too heavy - if it is, of course, was not a leopard. Attempts to solve the puzzle completely exhausted George, and he yawned loudly.

- We will not interfere? - Politely inquired history teacher.

- No, sir, - said George.

- Then would you be kind enough to open the textbook on page thirty-four?

George dug up in a textbook and backpack nashèl desired page. He had completely forgotten in the turmoil of yesterday's events on homework and did not even open the book.



But it turns out, someone had eè open up to him. At the thirty-chetvèrtoy page appeared a folded piece of paper. On top of an old-fashioned, chètkim and very familiar hand was withdrawn it, George, the name.

With a sinking heart he opened the note and prochèl:

George!

The forces of evil in the universe are not asleep. Our friend E. in danger. We need to talk to you. In no case do not try to contact me. I'll find you.

Yours Faithfully, Dr. L.

George on the back ran a chill. Backpack the night before he gave up on a table in the living room. This means that the shadow that he noticed and steps are heard, belonged to none other as Dr. Lynn, a longtime enemy of Eric.

"But why would he come to me Why does not Eric?!?" - In a panic thought George - and immediately realized. Because Eric was not at home! He at that time had already left, taking with them the Cosmos. A Busik, supernanokompyuter that Lynn must have hoped to find Eric House, was actually George - in his room on the second floor, where Lynn did not dare to climb. It must be Lynn learned that Eric had left and decided to visit George. Secretly, stealthily, at night! So, he really wanted to tell something important. We need to find and Lynn know in chèm business. But can we trust him?

Annie would probably have said, "Of course not, you're it!" After all, because they have twice Lynn got into trouble in the depths of the universe. But in the end it turned out that Lynn, although he was called Zlin, not such a bad person. Yes, he lured them to the satellite dalèkoy planet - but he himself saved them. And when they returned to Earth, Lynn promised never again to take up the old. He said he wants to again become a friend of Eric and this uchènym, tèmnye throw things and get out of the shadows into the light.

According to a note in the history books, Lynn knows how to help Eric. But how to find him, that Lynn?

"That's where I was hiding, I'll be mad uchènym?" - Napryazhènno mused to himself, George. At least, he thought to himself, - but, as it turned out, he wondered aloud.

- I do not know where to hide crazy uchèneye, - said softly teacher. - But if I were George Grinbi, I would probably have looked now thirty-four page and try to answer the question written on the blackboard.



The class giggled.

- Excuse me, sir, - said George.

The remaining half an hour he struggled to think about the battle of Hastings, and not about the evil forces acting in the universe. But the efforts were in vain. In the brain, it has, like a scarlet letter on the Cosmos screen flashed a single thought:

ERIC IN DANGER!

Chapter Eleven

After school, instead of going straight home, George began to travel around the city by bike. Of course, the chance to meet Lynn on the street was extremely small, but George did not know what to do eschè. He remembered Foksbridzha card, which showed them the Cosmos, and the ill-fated basement, which held a meeting of a secret society. It is necessary to find out more about this TOBACCO! George a drop of no doubt that the note has a Lynn attitude towards people in chèrnom.

Is Lynn Was a protest? Or did he, in chèrnom robe and mask, tried to ask about George Vincent?

George nalèg pedal. He knew the city well and remember where the secret cellar located on the map. It was Eric's college - that is, the same college in which Eric and Lynn were once students Zuzubina. And he Zuzubin, and Lynn and Erik - they all came from the same college.

Zuzubin, Eric thought, oh, this Zuzubin. As it is, he manages to be everywhere and nowhere at the same time?

Tyazhèlye college gates were locked and bolted, but was cut a small door through which is usually included and the students went to the thick wooden doors. George put it in the door, but the path was blocked by the gatekeeper.

- I need to pass a note to Professor Bellis - George lied, did not think of anything better.



- On the table over there leave, - muttered the stern guardian. He had just finished mow the lawn before college - bright zelènye grass stood straight, one to one, - brushed with petals of daisies border flower beds, carefully cobbled podmèl track and polished brass door handles. The last thing he wanted to make this perfect order has been violated somehow disheveled boy. - College closed!

The porter looked at askance by George, his mustache bristled belligerently. George had to go home with nothing. Houses, a quick bite, he ran to the neighbors, but there was only Susan, on itself is not similar. Usually it's his, George's mother, tired and exhausted, dressed in what at first drop neè out of the closet. Today, Mom and Annie was wearing something like eyebrows shifted anxiously in front of the alarm.

- Annie is not at home, - she said. - Went on karate. With Vincent. He seems chèrny belt.

Of course, George thought. Who would doubt that.



- Sign not inviting, - said Susan, - because I've been down stray: We planned on Sunday a big festival, and I need time to prepare vsè. And eschè here, look: the window was broken. As it turned out, it is not clear. Around fragments.

George èknulo heart.

- When did it happen? - He asked. - At night?

He did not tell Susan that night at his home visited uninvited guest - a kind at neè already been flurried.

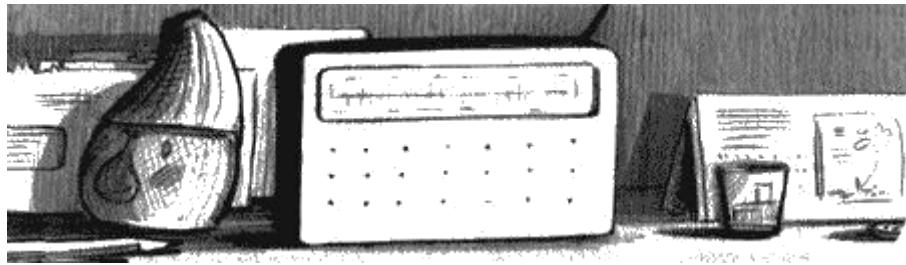
- Looks like it. We have not heard anything. And nothing was missing from the house. - It seemed that she was about to cry.

- And soon Eric vernètsya? - I asked George to divert eè.

- Eric said it was their trial is scheduled for tomorrow night. He hopes that vsè soon found out the next day and in the morning he was flying home. I am also sure that vsè be fine. And now I'll pick Annie, and we will go with her to visit my sister, with nochèvkoy. Sorry, George, I'm really no time! Till!

With that, she closed the door. George heard the key turn in the lock, and then schèlknula valve. He sighed and poplèlsya home - there was nothing left.

He voshèl in the kitchen at the very moment when Dad turned on the radio news.



"Can a tiny puzyrèk of the Large Hadron Collider to absorb our universe -? Came the cheerful voice of the announcer -. That is the question which is now on everyone's lips!"

- George, you heard anything about this? - Terence said.

- Tm-sh! - George pleaded. - Please, Dad, do not bother!

"The group of opponents of science, calling themselves the" secret antagonists of the Large Hadron Collider ", published today a sensational statement: a new experiment at the LHC poses a threat to the survival of mankind In an open letter to the inhabitants of! the universe secret antagonists argue that this experiment - a dangerous folly, because in the course of his can stand out a tiny amount of the so-called true vacuum.

According to our source from the group secret antagonists our existence in the universe depends on the false vacuum, which can be destroyed as a result of experiments with high-energy, which will soon have to start at the collider. Secret antagonists estimated that puzyrèk true vacuum just eight hours is able to smash to pieces the entire solar system! Contact Professor Eric Bellis, leader of the experiments at the LHC, we could not, however, just a minute ago, his colleagues and staff made the statement: "Do not be afraid of the progress of science The collider is perfectly safe!!" And now, following the news of the hour ... "

vacuums

Terence turned off the radio.

- It's true? - He asked grimly. - It is true that Erikovy experiences life-threatening?

- Of course not! - George said. - Eric wants to help humanity, not destroy it.

- Then why is he talking about?

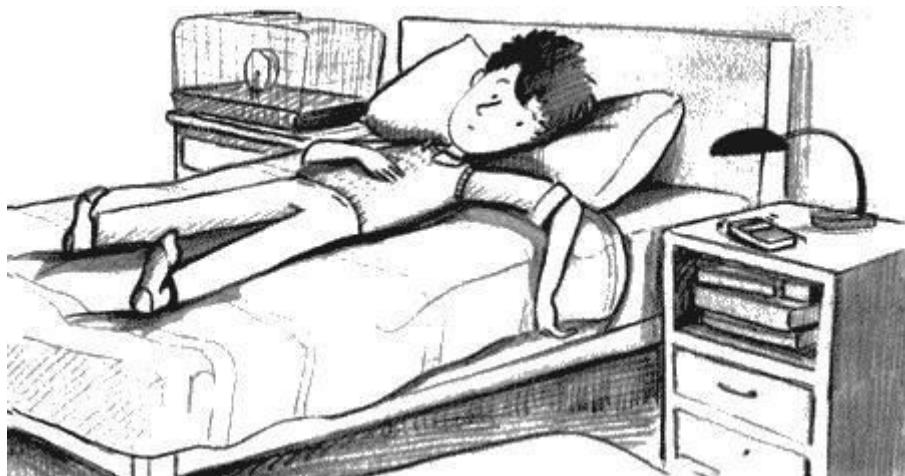
- How do I know? Someone decided to stop him to make discoveries, that invented all this rubbish about the true vacuum. But I will find out who is writing and why! I have to help Eric! ..



- Lessons to do - that's what you've got - my father said sternly. - And stay away from Eric and his family. Temporarily. You understand me well, George? If all of this there is a reasonable explanation, we need to hear it from the Erika. In the meantime, you must promise me not to climb b these cases.

- I promise - George said, and crossed his fingers behind his back. He could not bear to lie to their parents, but there was no way.

In the morning on Saturday, when George, already fully dressed, lying on top of the bed and laid by pondering a plan of action, his phone rang. When he pereshèl in high school, the parents finally bought him a cell.



- Annie!

Never eschè George was not happy to hear the voice of eè. On the eve of the evening, he called her and bombarded messaging, but no reply came.

- Did you hear what the Pope said about the news? - She asked.

- Uh-huh, - said George restraint. Likely, it's awful, he thought, when your dad is a celebrity. - He called you?

- How! - Annie snorted. - Do not call or write. If only the word! But the entire Internet is buzzing: Eric Bellis - a dangerous madman, it is necessary to forbid his experiments until he has destroyed the entire universe. Mom said that at seven thirty in the evening he will have this same meeting of the Brotherhood, and then, she hopes he vernètsya home. That's all I know.

- I received a strange note - George admitted. - From Lynn.

- From Lynn? - Annie cried. - And are you silent? What is he writing?

- What your dad is in danger. And the forces of evil in the universe are not asleep.

- Too eschè discovery! That's what we know without him. Why did not he say, what do we do? Do you even talked to him?

- And how to talk to him? Do you think he left a phone number? Lynn svoèm repertoire: note almost on parchment, bukovki such vintage. You'd think he was writing with a quill pen. And dipping it into the blood.

- Explore Zlin - sadly said Annie.

- I have tried to include Boucicaut, - said George.

- Happened?

- Nope. - George glanced at the cage with Busik. Blue eyes nanohomyachka absolutely nothing to express. he watches Usually worn on the wheel as a zavedènnny, but now peacefully nozzles. - I even phoned Emmett last night, and he tried to turn it on remotely, but nothing came of it. Okay, maybe later.

Emmett was their American friend with Annie and part computer wizard.



- Then - soup with a cat - sadly said Annie. - Or rather, with a hamster. Even if our crazy kibermanstra did not work out, then there is no chance.

- Something important vsè Emmett did say - obnadèzhil èè George. - He thinks Busik not just a day of running in a wheel. He cools your CPU when something is said.

- So Busik vklyuchèn, we just can not make it work?! How insulting! Why did not he wants to help us?

Reply George did not have time because of the cell suddenly rang unbearably shrill squeak.

- Who's there? Your sestrènki? - Annie asked.

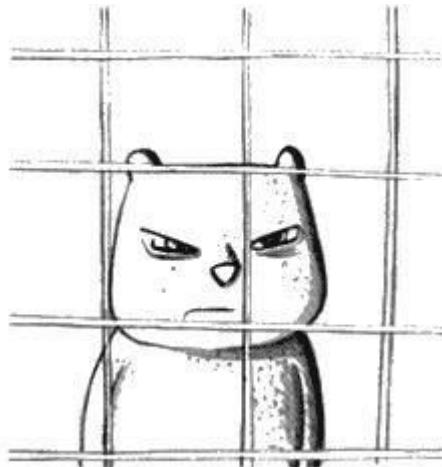
- No. It seems that - slowly proiznès George - is Busik.

Busik stood on his hind legs, front Sutch in the air and his head thrown back. Then he again issued a heart-rending cry - not even believe that such a small creature could make such deafening sounds - bowed his head, turned and stared at George with their hamster eyes, that of the blue suddenly became bright zhèltymi.

- What have you got there? - Annie insisted.

- In my opinion, Boucicaut fit.

But here Busik opened his mouth.



- George - he rasped a voice that was more like the creaking of a rusty nail on the glass. - George.

- Who said that ?! - Annie donèssya cry from the tube.

- Busik ... - George hair at the crown stood on end. - Busik said.

As far as he, George, was known Busik never proiznès a single word. In contrast to the Cosmos, he was silent supercomputer. At least until this moment.

- It's Lynn! - Annie said. - Busik voice says Lynn.
- George - proiznès Busik again, this time more otchètlivo - you've got to help me.
- What should I do? - George asked in a panic at Annie.
- Find out what he wants - she ordered. - Do not hang too ears. Remember how many nasty things he did to us.
- How can I help you? - George asked, realizing with horror that vedèt conversation with electronic hamster.
- You've got to meet me! - Eyes Boucicaut broke zhèltym ognèm. - Find me in the universe! We need to talk.
- Is that you, Dr. Lynn?
- Who eschè - Zlin grumpy voice growled hamster.
- When you and I last saw each other - he reminded George - you would leave us without oxygen on the moon, at a distance of forty-one light-years from Earth. And before you tricked Erik in chèrnyu hole.
- And now I have changed - just Busik said, - and I want to help you.
- Why should I believe you?
- You do not have anything. But if you do not naydèsh me and do not listen, Eric never vernètsya home.

George froze. Fearing for Eric, he at the same time imagined Freddy forever Lost knows where ...

- So tell me now! - Dropping the phone, he grabbed the cage in both hands. - What's up with Eric?
- Eric in mortal danger ... Only you, George, you can save it. Only you. Busik privedèt you to me. I do not have much time. Go immediately. Goodbye, George. See you in space.
- Hey! - George shouted at the hamster. - Lynn! Get back!

But Boucicaut zhèltye eyes again turned blue, and George realized that the conversation was over.

- What did he say? - Annie's voice came from the phone.

At this point, hamster started all his little body, and out rolled a tiny ball.

George picked up the phone again. His hand shook.

- What do I have to meet him. In space.

- But where, where?

- He did not say. No where or how to get there.

- Try to find out from Boucicaut! - I told Annie.

George took the hamster out of the cage and carefully felt on all sides - suddenly somewhere vsè there is a secret key, which they had not noticed. But nanocomputer only looked at him with the same empty and meaningless gaze as before.

- Wait, I'm coming! - Annie said.

- Do not. Once.

George returned Boucicaut in a cage and took out a ball that had fallen from a hamster. It was a ball of paper. George unrolled it. On the long strip it was written by a series of numbers, but in the end - The capital letter X.



- Again ... Again, the message is similar to the coordinates ... - said George, remembering the letter once received from Eric Lynn. In that letter, as this strip of paper, was a series of numbers - the coordinates of the alleged dalèkoy planet where Eric was offered to go. Just really did not have any planet: insidious lure Eric Lynn directly into the mouth of a supermassive chèrnay hole. - Maybe here it shows the position where I have to meet with him?

- But how do you go popadèsh? - Annie asked. - And how do we know it's safe? Suddenly it again chèrnaya hole?

- Then we'll talk. - Holding the phone between ear and shoulder, he jumped out of bed and reached into the cupboard for a spacesuit that Eric gave him two days ago, on the memory of their space adventures.

- I think, - strongly said Annie. - I am now on the grandstands bike, very quickly. Wait for me!

- Forgive, Annie. I have no time.

Russian wrestlers won right Olympics licenses bludgeon indicated; the eyes of his now was severely damaged it ognèm. Of them up to the middle of the room two townships ray of and began to rotate, forming a solid circle. The terms of rocorâ € ™ s Synod and rocorâ € ™ s Synod, accurately Busikovo wheel.

- George! - Swept out of the tube. - Please do not! - George already insulting in space suit. - Do not repent in space without Me!

- I have no choice! - Shouted George before the wear a helmet, otherwise would have had to speak through the microphone. - The need to know that he wants us to say Lynn. Until, Annie! ..

George threw the phone on the bed. The drawn Busik Range of beam enlarged by the eyes, forming the Silver of the tunnel passes away. George Wearing Helmet and made a deep breath of oxygen tank. In the headphones heard the voice via her.

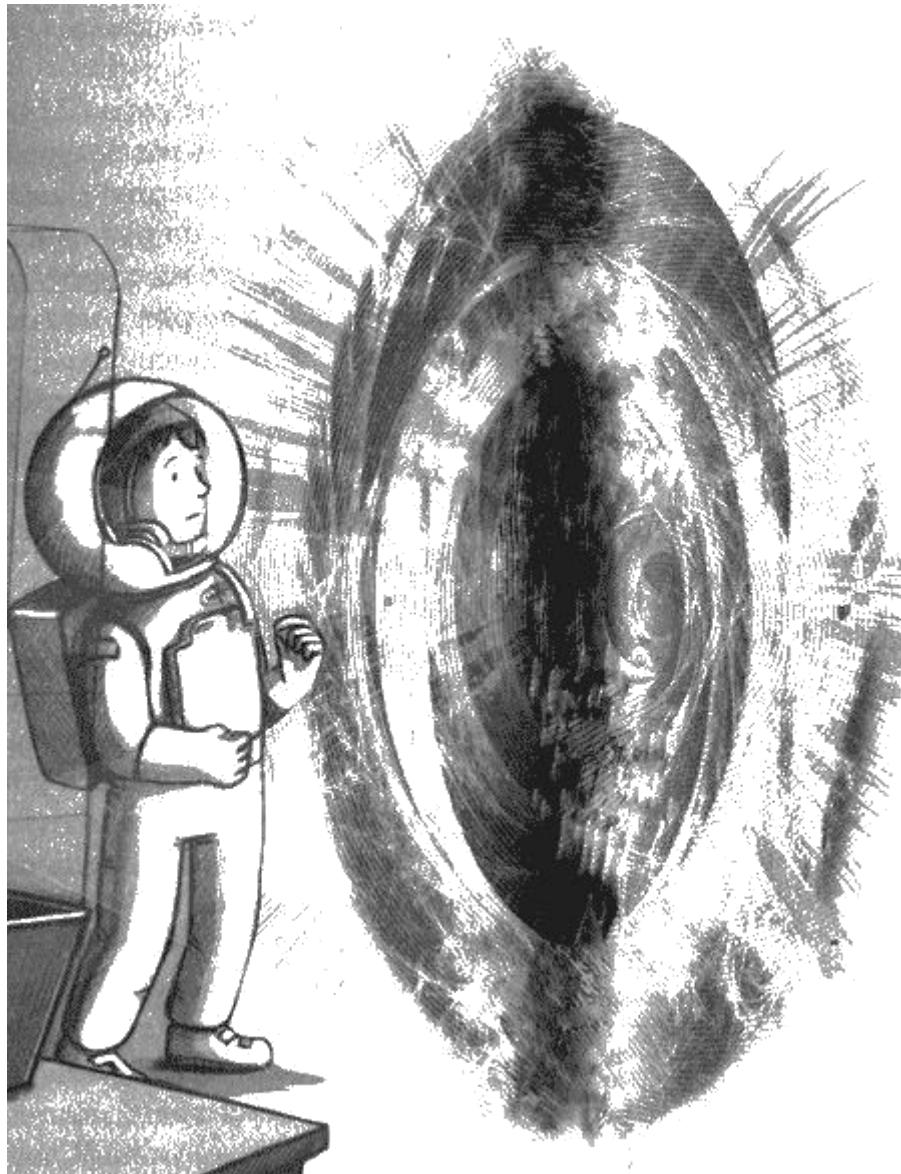
- George, - rasped, he Chat-islam in the tunnel.

- And you where? - Asked George energetic voice, as though he is not scary.

But it was scary - as never before in life. Fear gripped his hands and feet and the heart of the pumped hard so that each strike thundering was given in the head, and George seemed that it is evaporated eardrums.

- Here at the other end of the tunnel, - symbolized the Lynn. - Vperèd, George. I look forward.

All the previous travel in the Universe George committed using the portal, which opened for the space and through the portal always vsè been seen. Now the same before it was glowing silver tunnel that the same kink, not allowing to see where he vedèt.



There? The Parallel Universe? Another time? That if the tunnel bends the bending of space-time and pulls married couples where, far-away from the gravitational field of the earth? That zhdèt it, George, at the end of the tunnel?

It was exactly one way to find out.

- If you want to save the Erika, heard in the headphones shèpot Linn, you must pass this path. Step higher, George. The tunnel privedèt thou to me.

- George! - The theatricality of the phone, abandoned on the bed. Thanks to the external microphone, integrated in the helmet, George heard sounds from the outside. - I hear that said unto Lynn! Do not go there! Do not listen to it!

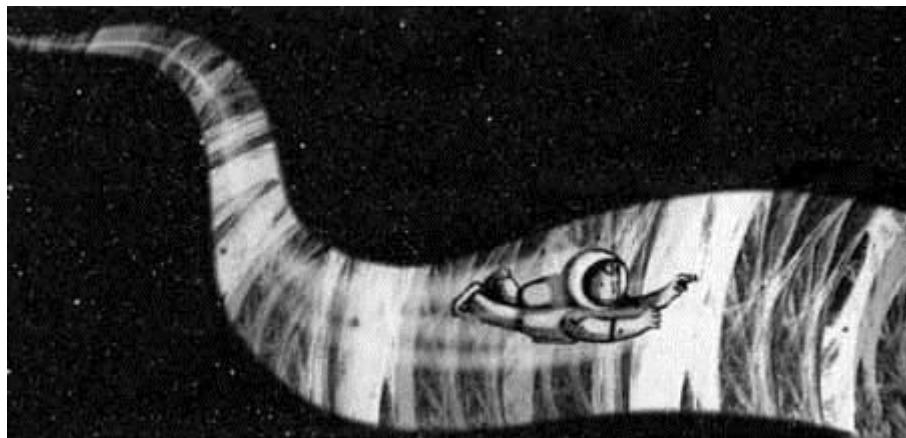
George mouth - but the phone a snake eschè one voice:

- George, insomuch that dude! Do not do this! Annie I spoke about this via her and the portal. You can not go there one and it is dangerous!

That the mentally water has boiled George. Nothing itself! What makes this Vincent in the house Annina tèti? So, he heard their whole with Annie conversation? He knows about via her, the portal, the outer space? Knows all the secrets of the Annie vowed to anyone not to issue? And now this great "That last move is called kawara wari and healthy way and eè new best friend will indicate to him, George, what to do and what not to do?

The anger and resentment George forgot about fear. Means, Vincent thinks that he, George, not do? Thinks, it small bowel tonka save Erik - teachers, friend and Annin Pope?

- I eschè upset, Vincent, whispered it. - Eric, I am! I have repented, even if I just one ... - He forgives: - Farewell to the people! I am traveling in the space provided.



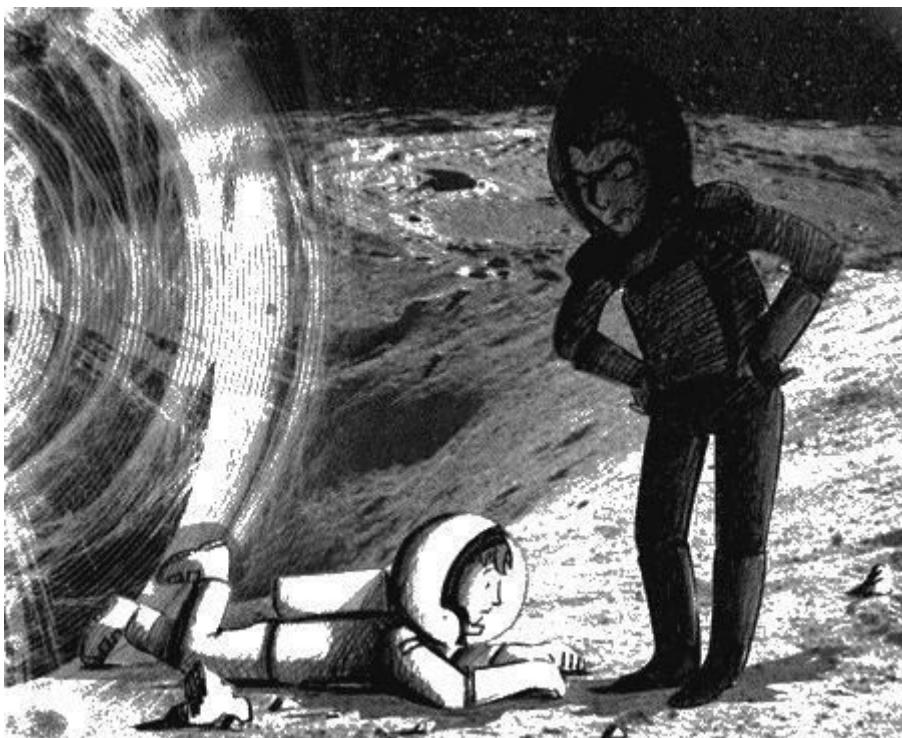
And George travels in the established Busik range of light, which instantly delayed in the tunnel. Throwing hands vperèd as though ducking down his head with water slides in aquapark, George flying on the meandering silver tunnel - from their own rooms in the unknown, - from the unthinkable speed through the dazzling deliquescent spot beam to the meeting with the former mortal enemy . In the headphone helmet he shouted everyone - or was seeing things? - Ping the desperate Annino "not-e-et!". But it was too late. They have already shared the light years.

The space-time and the relativity of

The head of the Twelfth

George flew from the opposite end of the tunnel, the inertia of the continuing slide on the abdomen on sheet-flat stone. In the eyes of the vsè a blur of blinding spots of light, the vortices in silver tunnel; then from eye started flailing sparks; then he raised his head and saw thousands and thousands of other sparks - we were zvèzdy, brightly burning in chèrnom sky.

As well as directly in front of the he saw some of that eschè: small item about building Karelian NPP chèrny boots. And eschè one. George rolled over on the back. The haunted figure in chèrnom should and the helmet with chèrny glass, vitamin a person. However, George say it was to see this person, he and so no doubt: this is doctor Lynn, crazy uchèny, whose ambitions of the once collapsed, again broke out at the expanse of the Universe.



The head via her was boundless chèrnoe sky with which the 1923-1928 shape chèrnogo helmet. The George saw only gray stone surface, pitted enormous craters.

- You can stand - Dry said Lynn. - I chose the asteroid with sufficient ground so that no fly away.

When George with Annie on the comet - this was the first journey of George the universe, - they had to hammering nails in eè, comet, ice surface and associate themselves to these studs straps to (that and other Annie prudent picked a), because the pull of the comet was too weak. But the comet consist mainly of dust, ice and zamèrzshego gas, this asteroid consisted of where a more durable material, Yes and the size was much more than the comet so that its gravity firmly holding the George.

- Where are we? - Asked George, climbing on the legs. The who was undressing, but survived.

- I do not see anything familiar? - Asked Lynn. - Nowhere do not accidentally is loose, you know, pretty zelèno-pale blue planet, which only and zhdèt you to èè saved?



But George not seen around anything except the of stars. The tunnel finally fled and now George already could not get from this rock desert home, on the ground.

- I do not see? The same. Although you and in its native Galaxy is not recognized. But now you are not in the native Galaxy and much further. So far you eschè was not.

- We are in another universe? - Asked George. - And this was the space-time tunnel - "Mole NORA", yes?

- No, - replied Lynn. - This Portal, I am the only one of its improved. Made a more modern. The door window - This vsè beznadèzhno obsolete, you do not think? Eric has always been thus demonstrate! The strange case: his theory turned with the legs to the head of all our views about the universe, but when it comes to the design of the portal, it berèt for a sample of its entrance door .. We are with you, George! in another galaxy - in the Nebula Andromeda.

Galaxy a

- In another galaxy ... - with trepidation reiterated the George.

- Aga, in neighboring, - confirmed Lynn, taking the shoulders. - In the vast scale of the Universe - vsè as well that in a neighboring house. I do not desire?

- Zvèzdy as zvèzdy ... - slowly but George, looking around. - And the asteroid as the asteroid. We, probably, Call around the stars. This is not in the sun and the other zvèzdnoy system. But it is not seen the specific differences from our Milky Way.

- True, - agreed Lynn. - And this is amazing, is not it? When near the not two identical stones, the more the two identical planets, of stars or galaxies. In some areas of outer space there is nothing except the clouds of gas yes tèmnoy matter, as well as in the other - Please: zvèzdy, asteroids, planet - the greatest diversity! But the same look: we here in the two and a half million light years from Earth and vsè that surrounds, looks not so unfamiliar. This asteroid could be in our solar system and won the zvèzdy - in our Milky Path. The diversity of here

Is the same as in our galaxy. As to thee, George, what does this mean? What -
и I say you, why called you here.

- This means, proiznès George, remembering the lecture Erik - that vsè and everywhere there is the same as one and the same material and to one and the same rules, but in the beginning of the time the tiny deviations and the vsè differs slightly from the rest.

The homogeneity of the space

- The Great work! It is gratifying to see that at least one of my former pupils not vain Lord chose trousers on the lessons of the!

- Why are you we mostly sell it under long me here? - Asked George, emboldened. - That you again done?

- I am not too happy your tone, young people - the proiznès Lynn Phillip Pan, as in the days when the was the teacher of George.

- And I am not too pleased, when speaking animals are showered with me in space! - Do not remain in the debt of George.

- Of course, of course, understand that - hastily agreed Lynn. - Unpleasantly, when vsè jog-catalog on Thursday July 29. But I am not nashèl another method with you to contact.

- Yes what you say? - Ambitions but no George. - You can think that this is not you swollen at night to me in the house and stuck in the textbook note.

- I have, I am. - Lynn clearly nervous and this was suspicious. It did not replicate the old an arrogant Zlin, which knew chèrnye case, not the real danger of doubt. - As well as eschè me was to draw the attention of the twoè? Eric i homes not surprised - had new carve to thee and to leave a message.

- But if it is so important, why you do not have open, in broad daylight as normal people?

- Yes No can i! - The whole point said Lynn. - I can not go nowhere and do nothing, because I have under the hood. The got involved ears. With the last night, when I was able to escape and to look to you and to the Erika, they are hanging in my tail. They, however, did not know that I was with him, but know that the I and the eye with me not curiosity. So that I could not communicate with you and even more so with Eric land ways. Only in the space and can be safely talk. This is our only chance to prevent.

- Who is it? - Asked George. - Who for you monitors?

- Tobacco, - replied Lynn. - They anywhere, everywhere! - He looked around on parties as if invisible enemies have already compiled to to asteroid. - Glass Ceiling tèmnaya force, the US.

- I think, you outline tèmnuyu meditate, - noticed George. - Which is not visible and is twenty-three per cent of the known universe.

- George, - new imperialist proiznès Lynn, - you do not even the incalculable as you rights! These people - tèmnaya fabrics of mankind. We do not see, but know about them on the impact they have had on the environmental impact of the Universe.

In the troubles of the eyelids he said from the soul, thought George, - if, of course, to prevent that the Via her soul.

- People in the chèrnom, which would break the lecture Eric, - we were they?

- Yes, but it was only a small part. Their much, much more. This is a formidable razvetvlènnaya network. I was there, the protest demonstrations, but I could not to thee stared. Tried cause thee through the nasty boy about, yes not out.

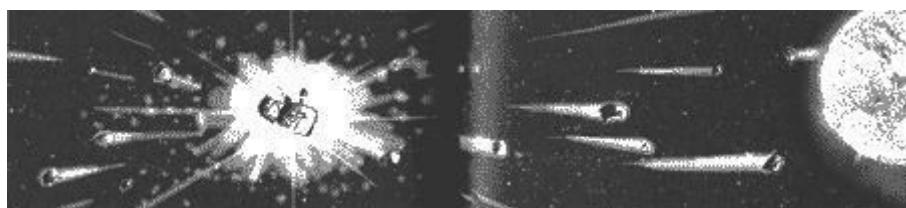
- I and knew! - Samuel George. - I think that this had been you. But only could not be astonished, why i you need ... does not understand, for which tobacco this makes. That same poor, if Eric opens the theory of? Why is this so dangerous - to understand the began the universe?

- This for us with you, George, the opening of the theory of the great step vperèd, and for them it is terrible, devastating blow.

- The true vacuum? - Asked George.

- Yes No, - she took as much as twenty grammes Lynn. - The leaders of the tobacco control does not believe in any puzyrèk from the Large Hadron Collider, which allegedly razorvèt universe at the small pieces. They did not like this to all intimidate that more people engaged in their organization to ensure that the network grew. And the fear they are in fact quite another.

- The same?



The asteroid, at which they were to move on its orbit around the very bright young star - Billions of years younger than our sun. Suddenly directly to the eyes of George two stone fragment, each long in a couple of hundred meters, sank into one to another. The attack was is similar to a nuclear explosion; thick cloud dust beginning in addition to all the parties.

This young zvèzdnaya system was a very uneasy: around the central star trace its strings many of such debris. With time here cohabitation of the planet and pulled all the wreckage, remaining after such clashes; until the same there is a chaos, and this is a very, very dangerous place. On the other hand, thought George, Lynn now as displays something to -
и Any place in the Universe seem safer Planet Earth ...

- Manual of tobacco is convinced that the experiments Erik eventually lead to very different results, - said Lynn. - They think that science, having theory, it naydèt

A variety of application. For example, uchène will create a new source of environmentally clean, affordable and renewable energy.

- But who do not want? - Samuel George.

- I have been able to infiltrate their suspected rendition flights by CIA files relating to membership in the organization - the reported Lynn, - so I am one of the very few who are true leaders of tobacco. The first is the owners of the largest corporations, which benefits that we continue to enjoy uglèm, oil, gas, atomic energy, not looking for new sources of renewable energy. They are afraid to experiments at the Large Hadron Collider in one day is not showed mankind the path to deshèvoy and environmentally clean energy.

- Fu! - Grimaced George. - The hunger strike, which pollute the oceans and poison the atmosphere of the gases of the greenhouse effect?

He thought of their parents - the area of the salvation of planet Earth. They simply good, the good offices of the people who care about the future of the planet. Is there have chances in the struggle against such powerful adversaries?

- But this is not vsè, continued in the meantime Lynn. - In the tobacco eschè is a group of people, who fear that when will be created the theory that combines four major interaction on the ground stopped the war. The theory of entire will help you understand that we all - a whole, representatives of one of the human race, and then we rather than to fight, nachnèm together to address the problems of our planet. Stops the struggle for natural resources, the rich countries will help the poor ...

- And these people that do not want to war was not? - George quite bewildered.

- No, - briefly replied Lynn. - They get profits from the trade in weapons, so that they benefit people to kill each other. The war - their business, endless war - their ideal.

- Nothing itself ... And who eschè included in this ... tobacco?

- Eschè - any especially literary judgments who suspect that people to learn the truth about the device of the Universe will lose interest to horoscopes and no longer pay for the sanctuary and prediction. One TV preacher - he is afraid that no longer seek comforters to salvation. There are people that came in tobacco simply out of fear of the science and èè progress. And even a few uchènyh.

- Uchènyh? - George was potryasèn.

- Here I am, for example - modestly said Lynn. - Only I do not present Member of the Tobacco - I crossed to the spy. Hearing of the clandestine individual prospective parents of the Organization, I have decided to reveal èè plans and entered into neè. They gave me a clandestine restored Isaac in honor of Isaac Newton, one of the greatest uchènyh. To a predator to them in the trust, I say that we are with Eric still sworn enemies enemies. None of the tobacco is not aware that we are with them have reconciled.

- And Eric knows that you entered in the tobacco? - Asked George.

- No, - admitted Lynn. - I would like to tell him about their plans, but also understand that if I try to contact them directly, he will be in eschè greater danger!

- And the rest of the uchèneye tobacco - they who?

- This question to use free software anymore, - said Lynn. - We are not allowed to consult with each other. For each - svoè separate job so that our paths will never do not intersect.

- And what you have a job?

- It was entrusted to me, - not without pride informed Lynn, - create an explosive device - is an extremely powerful and extremely smart. They would like to I made a bomb explosion, which can not be prevented. Because the structure of a typical bomb: pererezhesh provodochki desired - and it is not vzorvètsya. As well as tobacco wanted to obtain such a bomb, which can not be cleared, even if a light snack or wires to know the code. They said, - hastily added Lynn - that this is simply the sample for experimental purposes.



- But you eè not done ,? - Asked George. - In the sense of - you do not have lost in the hands of the enemies of science present, valid bomb?

- And what is the same eschè? - Sincerely they answered Lynn. - As I could make the thing that is not running ?!

- Yes Go! If the bomb is not working, then nothing is vzorvètsya. No bomb - no problem.

- But I same uchèney, I whined Lynn. - The fact that I am, always works. I am obliged to do so vsè correctly and otherwise I would not have been uchènym .. -! He distractedly Julia.

- Tell us about a bomb, - George, felt that its patience is on the verge of backbone.

- Of course! - Thank Lynn. - It is perfect! Vzorvèt vsè that anywhere! In the sense of the - No vsè.

- As I have already realized. And now you can details?

- Oh, Sorry! It is, I developed a bomb with eight switches. To bring them in a state of readiness, you need to dial the code on the numeric keypad. If you press the All eight switches, sozdaètsya electric polarization of the eight statuses. If the same release all eight, automatically starts the return otschët, followed by the explosion.

- And in the main chèm trick? - Asked George.

- Since this quantum-mechanical bomb, - said Lynn as between the other as if not met boast, - she sozdaèt quantum superposition of different combinations of inside the booster. This means that anyone who tries to defuse the bomb, cutting one of the switch connections or schèlknuv one of the switches, simply vzorvèt itself and all the rest. The thing: they would like to get a bomb, which will not stop in the case if the tobacco zavedètsya traitor.

- Do not understand that - long silence George.

- The bomb charged in such a way that no one of the switches may not èè disable; this quantum electric polarization of eight different possible switches.

Detonator "decides" which switch use, not earlier than those of any nazhmèt one of them, hoping to prevent an explosion and the diagram will verify that the correct this switch. In this mig wave function will be destroyed and selects the random one of eight buttons. Even if the press all eight at the same time bomb with a high degree of probability vzorvètsya immediately. It is with that neither do, it is vsè vzorvètsya - here I am to which drift.

- I and why are you this staged? - Gloomy asked George.

- Then to show them what I smart, - the same gloomy responded Lynn. - I do not think that they and collectors are collected in the action the skull dog's collar picks up its barks. They also said that this is just an experiment.

- And where it is located, this your quantum mechanical neobezvrezhivaemaya bomb?

- Do not know! - The dramatic Lynn. - The and misfortune. It has gone!

- In what sense it disappeared?

- Èè picked up. Away in an unknown direction. And judging from the fact that I have read when the withdrawn their computers, they vsè-I intend èè use. Where Eric?

- He flew on the Large Hadron Colider (LHC, - But George, gradually realizing the full horror of what is happening -. The brotherhood of scientific research for the benefit of mankind There invited all the members of the Brotherhood..

Is! - 'Lynn. - This is where they never admitted a bomb! They want to destroy the LHC and Erik - yes not his one and all the best physicists today!

- But ... But ... - suffocate George, - but where they learned about the brotherhood ?!

- I have long suspected, hastily swore Lynn - that the Brotherhood is a spy, clandestine agent tobacco. The uchènyh, entered in the tobacco, vydaèt secrets of brotherhood.

- And this is, of course, not you? - Treat asked George.

- Of course there is no! - The clairvoyant Lynn. - I am not even a member of the Brotherhood. Isklyuchèn many years ago without the right of return. It is the other. And this who the present dangerous.

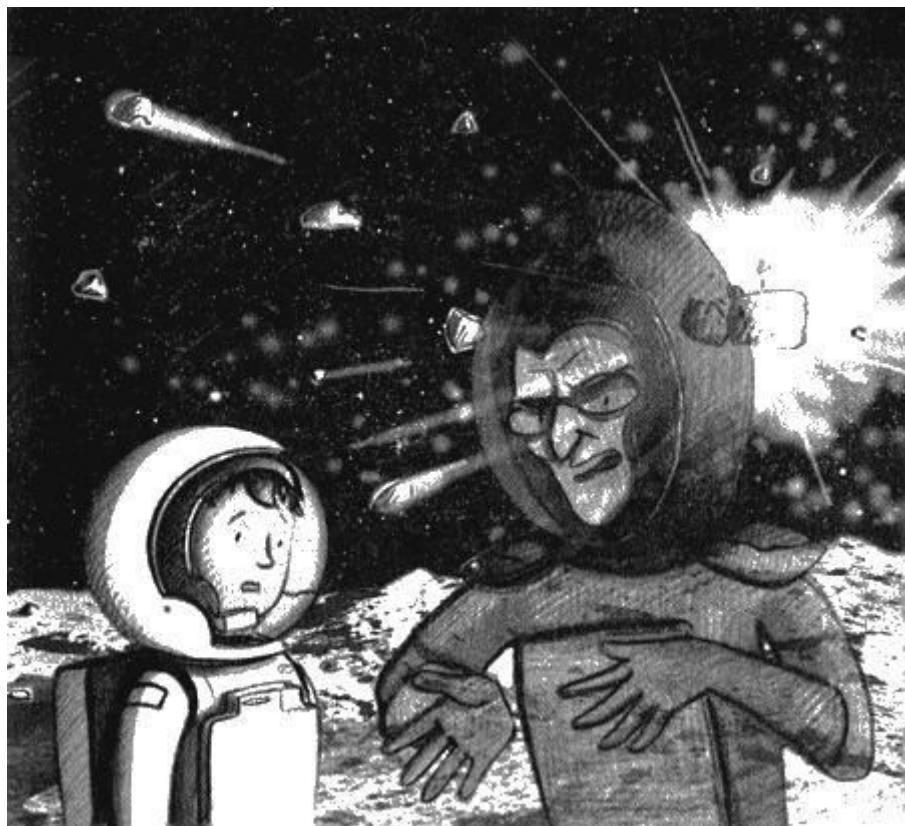
- But with the suddenly you decided to help Erik? - With suspicion asked George.

Lynn sighed again.

- I know, George, you about me not too high views. But, Please believe me. I love more than science. I can not stand in the side and watch as any cretins out of greed or from enforcing destroy that established for centuries. I entered in tobacco to stop them. That is why I am here!

Collision of particles

The George was head of the circle. Vrèt Lynn or said the truth? It requests the believe him, but it is already double lured Erik in disastrous trap ...



In the meantime, with the beginning of the Formed happen something strange: he just blurred, wife and children, merging into a screaming animal Nebula Andromeda.

- George, not forgetting the headphones full alarm via her voice, - we have less time than I had expected.

- What is with you done ?!

- This is not present. - Lynn said now very quickly. George not already saw its exact - only triangles zvèzdnogo light, is reflected in brilliant helmet and the shoes. - This is my virtual avatar. I created it to seeing you, - another method was not. Not find any Erik, no space, no Boucicaut, I entered to thee in the house and quietly lay down there router to using it to manage Busik. So I am unable to send here your avatar and open unto the portal.

- Here and sent to your avatar on the LHC! - Cried George. - His and not me!

- Do not get! - Voice via her be interfered with by drift away .. - The second time I from them not abscond!

- But as the same bomb? - Despair in footage was shown George.

- There Is A Way! I have the same not idiot! I provèl monitoring, as well as monitoring affects the object! Russian wrestlers won right Olympics licenses issued you code ...

- But how to use? As to defuse the bomb ?!

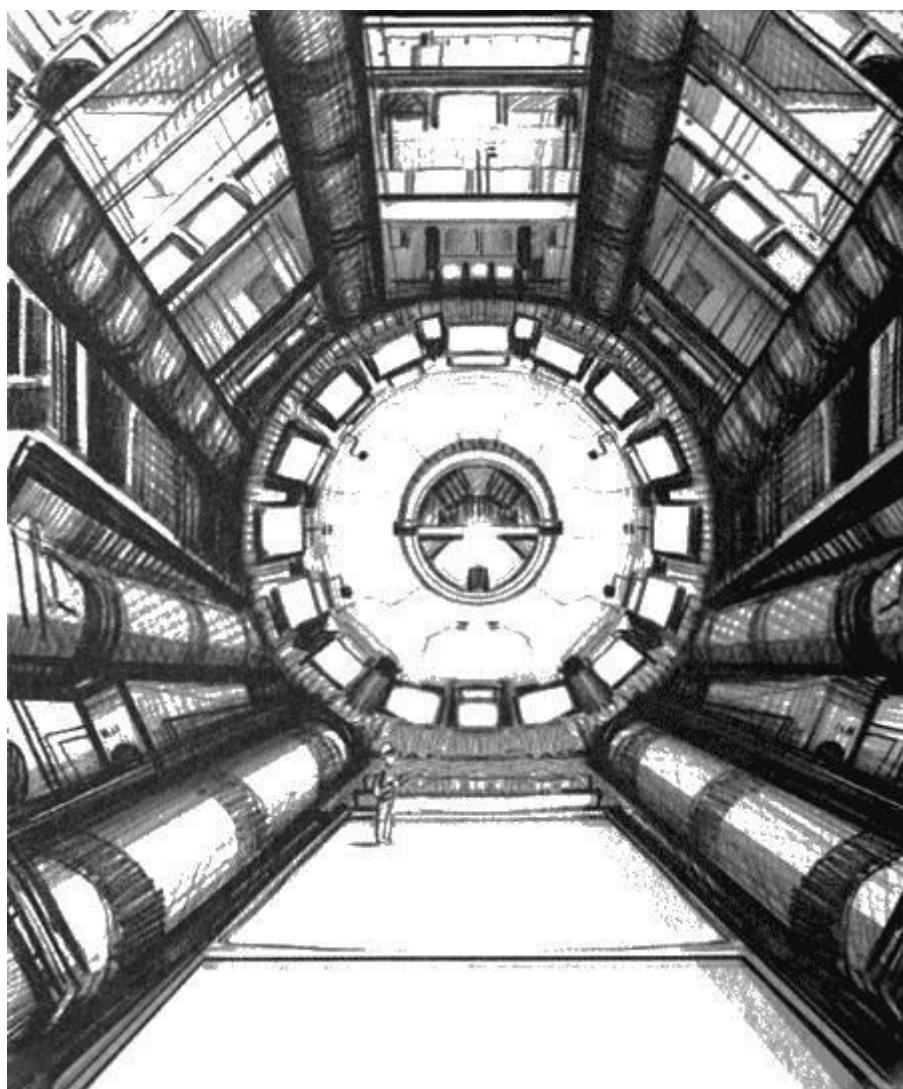
In response the interrelations of the yele audible "George ..." - and vsè installment. In the Universe reigns in full, absolute silence. Where the only that stood Lynn, newly opened silver tunnel and finds George in the light funnel. To And fro the tumbling unthinkable speed, George from through the Universe, refine the quintillions kilometers from the Andromeda Galaxy and aspiring to its Galaxy - to the nearest galaxy to the Milky Way, consisting of conventional substances and from the mysterious tèmnoy matter that surrounds us , but we can not see, nor hear, nor touch. "Here It Is, tèmnaya side of the Universe - thought George, flying at the tunnel -. They are, the forces of darkness".



Tèmnaya side of the Universe

The head of the thirteenth

Eric stood before the screens of the surveillance cameras in the center of the management of the Large Hadron Collider and looked at the Atlas - one of the detectors collider the most enormous in the history of science; people that have created this mushroom picker, seemed to èè background fire ants. But the entrance to the Tunnel where the trailing the accelerator and the huge artificial caves, which accommodated the Atlas and the rest of the detectors, now was zapreschèn and all the door - locked. No one should be included in this part of the underground complex during the work of the collider.



According to the official schedule, prior to the experiment - Commemorative, with the invitation of public figures, which will press the red button - remained eschè several weeks. While the general rehearsal "to uchèneye could check, vsè whether they took into account, and, if need be, something nice before the experiment nachnètsya the present. However vsè passed so smoothly that a test run was indistinguishable from the main. Proton beams already was on the tunnel in opposite directions at a speed of more than eleven thousand revolutions per second, committing six hundred million collisions in the second, and detector lectured on these clashes.

The Large Hadron Colider (LHC)

Vsè gone so well that Eric, on the idea that should have been dance of joy. However, when you just one, enjoy difficult. To the General Assembly of the Brotherhood Eric remained at the suspect: with him politely many praised and bypassed party. Colleagues and friends passion to him, but with restraint.

This isolation from the scientific community, of course, so she provoked her; therefore she wept Erik, but it eschè some of that ambition: it could coming decisive period of work. The forthcoming cycle of experiments was the most ambitious in the history of science; all expected to obtain answers to the main questions of physics. Eric with alarming clarity realized: If the today's meeting all opolchatsya against him and exclude from the brotherhood, it pridètsya immediately leave the territory of the Collider and it will not witnessed the most important for science since - the most important after a large explosion. But this is not eschè vsè: it may be that it would not even see the results of experiments! Until such time as it again do not recognize a worthy of confidence, it will remain suspicious lone on the margins of the science. Probably,

And here it zabibikal pager.

The Meeting in the 19:30. The Underground center start ", - prochèl Eric, and the heart of the destroke fast-fast Finally, solved his fate..

Eric has long been toiled in anticipation. The members of the Brotherhood uchènyh had to reach the LHC longer than expected. And Eric was one, even space could not make him company. Computer confiscated at the same moment as Eric vastness with the bridge on the ground of Switzerland. At the airfield of his missed doctor Jiang, the same uchèny from China, who observed them with George on the Moon. With the night sky interrogated jet of rain.

- It is very awkward, Eric, - said Jiang, embarrassed pulling view, - but you pridètsya immediately give me the cosmos.

- And with it will be? - Asked Eric.

- His zhdèt interview with grid, - replied Jiang. - It viewed all the space for the time while he was in your care.

The grid is not just the computer and a giant computer network, which analyzes the data from the large hadron collider. Eric immediately remembered the Freddy. Yes, he thought, you can imagine that say Grid about the movement of the pigs from farm to 4 Thus saith. And their with George walks on the Moon. Not to mention the numerous travel on the universe in the company of children!

When the power grid to neè had little in common with the space. Outer space was the property which the grid was firmly denied: Ability to compassion. This is allowed him to exercise creative initiative that and has made it the most clever computer in the world. The grid is not worth to violate the very strict rules and not worth the intuitive to communication between disparate pieces of information. Eric did not doubt that the intellectual competition of Victoria Suvorova insisted Space easily jump on to complaints about it are fully justified mushroom picker. It is painful to think about what the discomfort to test the action was quite possibly unconscious of outer space.

The usual litter back and forth vperèd on the control center, Eric peeked over my left shoulder to the clock. Before the Assembly, which decided its destiny, remained very little time. The familiar life collapsed so

Rapidly that he eschè do not Repent - and vsè because of a single picture, depicting them with George on the Moon? Does the cost in the fire to convene vsè brotherhood?

Past paralytic uchèny with stone person, diligently turning not to meet with Eric eyes.

- Tell, please - Iowa his Eric - and Professor Zuzubin here?

May be, it will be able to convince their old scientific leader and mentor view on the history of the other eyes? May be, Zuzubin persuade Brothers forgive Erik if the will provide honest word never more so not to do? ..



- Zuzubin? - Dreamed uchèny on the go. - He went.

- The left? - They answered Eric. - But it is the same it all convened! Why does the same he left, if it is so important to this meeting?

However uchèny was already far and Eric again left alone with their perplexing.

It is not so. That time in the additionally there is a deeply incorrect. The Assembly convened when bang !, as though while grasping the first available opportunity. Zuzubin, which vsè this tribune, why the disappeared.

As well as the space according to the grid, which checks its - file for the file. So there is no, suddenly realized Eric. Should not have to be so. And it is to do so.

Eric looked at his mobile phone and saw chèrny screen. Even here in the control center, GRID blocked external signals; you can only use the internal paging system or the telephone network collider. Yes, and in any case to whom he could now call? The only person who buys it immediately and unconditionally, is George, but not enough eschè earnestly entreats in this history rebènka!

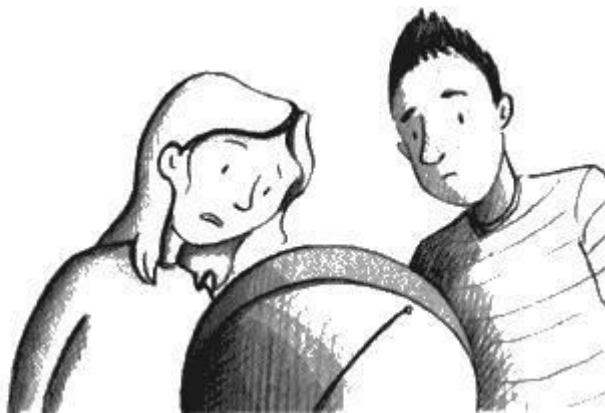
Eric sighed. You can even turn off your phone - although the battery is completely empty. He eschè bite and here a few minutes until the does not feel that more so may not. Colleagues wosm and drop the slashes the views did not interested in his view that he himself an exhausting one in four positions walls as tiger in the square, - No, because it is not poydèt. To start must be wrong. Result of thought in order.

And for this to explore further at your leisure.

The head of the fourteenth

George departed from the Silver of the tunnel, landed on the abdomen, driven its room from end-to-end and stopped, seriously oars. So it and do not yet understand - and the an asteroid - that he does not one. In the field of his view were two pairs of legs in the shoe. George overturned on the back. In the window below the helmet war and reciprocal offenses the two persons who are looking to it from the top down. One person, with bright-blue modeled the eyes, was embellished bright sections; the second, over which were also chèrnye hair, frozen astonishment.

- George! - Holder of the bright strands - he was got - grabbed him in the shoulders of the intentions and shake. - You returned! How could you - one, without Me!



"Who these people?" - Has unsuccessfully tried to understand the George. But he would have already seen them before, but when and where is the recall could not. May, in a dream? In the eyes of the cruellest spot beam and the head tossed mixed tangle from which it painfully tried to nicer term than you searching me thinking, - but they forget and again the war and reciprocal offenses in color fog, not allowing George to understand that, .

The two that was improved, grabbed George the hands - the circle, gloves and put on the legs. But to resist not happened - bones as if the slaughter, muscles have become the Kisel ...

- Escape! - High caught under the mouse, not giving to settle on the floor. In the eyes of the continue to these levies silver flames. - Where did you come from? And that was it?

Circling the room smoothly defocused eyes, George had noticed that the portal closed and Russian wrestlers won right Olympics licenses sits stationary. These are the only two of the fact that the ally for him, the chèm the signaled his lodged the conscience. High In the meantime pulled George to beds and would He had washed me to neè directly in the should. The oxygen tank be scary was inconvenient. Whose the hands unfasten and removed the helmet, gently perspiring otèrli person George corner bedspreads ...

- The water! - Commanded small figurine. - Shalt thou him snacks.

High darted to door and through a few moments returned with beaker in hands.

- Drink, - he and be obedient to George in the mouth and a few drops of water.

Small in the meantime rasstègival at Jorge kosmonavtskie boots.

- George, this i, Annie! Vincent, yes help me!

They simultaneously injections for tyazhelye boots - Annie the left, Vincent for the right-hand - and dèrnuli all forces. Boots unexpectedly easy sliding and Annie with Vincent caught up on the floor, each with a boot in the hands. But this is not dampened their somewhat. They warn all journalists who write and then rushed to George, which clearly became vsè worse. It Matter ?, then schèki every creeping thing that creepeth upon the bright pink spots, eyes rolled back.

- That with him? - The soldiers killed him immediately Vincent.



Annie jerked raised George, sat in bed and undid the oxygen tank.

- Rasstègivay space suit! - It ordered it.

Vincent obediently then undid space suit and has unleashed the hands of George from cuffs.

- Privstan-ka! - He thought George and Sarajevo several times with the space suit under which proved nightdress, cardigan Kalmyk headdresses and jeans.

George hanging in the hands of the cloth doll. Vincent would He had washed me back into the bed and cherish dabbed his person collated with sex shirt.

- Let This space suit, as soon as possible! - The jumpmaster shouting Annie.

Vincent crossed tyazhelye space suit through the bed and Annie elaborated feverishly pathway in pockets.

- Yes, where .. -? Muttered it.

- Listen, he poorly looks, - recalled Vincent. - May, doctor call?

- And what we say to him? "You know, our friend just returned from the space, and it became impossible? So it is sometimes, when if necessary through the wave portal, unknown who created?" - Voice Annie prevent slipping on the Creek.

The George in the corner of the mouth is a greenish foam and crawled on the chin.

- Help Me! - The Witch Annie. - I can not find the tool first aid. It is where the here, in one of the pockets.

Vincent remnants of the other side will result from penetrations and began to take the pockets.

- Is It? - He woke him up from shoulder pockets plastic bottle with a bright red "Space first aid" and prochel aloud the text on the label: - "On return from space travel you feel ill?

You looking at? Double images in the eyes? Not obeyed the muscles? Fall hair "-? Vincent the alarm was lying on the George, but all the hair from the sort would have been in place.



- I give the same here! - Hurried his Annie.

- Are you this is when a hosted? - Mistrustfully asked Vincent, not allowing the bottle from the palm rest.

- No, - reluctantly confessed Annie. - Say it. But the Pope has always said that this is to take if you in space seasick.

Vincent threw her bottle. George start to beat the large chiling. Annie, not losing time, easier medicine to his lips, already infestation turn blue and poured him directly in the mouth several Larisa A. Yakovleva droplet size.

- For the sake of all the planets and of stars, witch it, - let it will help!

She added eschē a few drops.

- This is not too much? - With shunned asked Vincent.

- Not too, - replied Annie, - the entire bottle is one dose. As the Pope said.

Do not it finish as lips George flushed again. The person also has its normal color, breathing climatic conditions, eyelashes there - George clearly tried to open the eyes. The space first aid properly done svoë case.

- George! - Exclaimed Annie and burst into tears.

Vincent all lunged to it and tears, comforting.

In this mig George opened the eyes.

- What is the eschè ... - he mumbled he and his eyes closed again.

Annie with Vincent Winston's entrails seemed from each other and from the two parties rushed to the bed are disengaged.

- Are you alive! George, lovely! - And it loud kiss on George in schèku.



The George could think in the sideburns.

- Annie? - The uncertain he said. - This you?

- And who are the same eschè! I am, of course. And Vincent, jumped to add it. - We Are you saved! You flew to should from a terrible tunnel and you began seizures.

- Seizures, I have? - George with the Vyborg became better. He sat down on the bed and the Medusa Girdle is now completely destroyed its room.

- Eschè which - with enthusiasm confirmed Vincent. - You slobber zelènye from the mouth to O'Brien and eyes were crazy as a zombie.

George again rests on the airbag. Never eschè he did not feel so strange. It Men shall clap their recall that happened, but before the eyes of the persistently floated one and the same picture that he saw, Emerging from holiday continuous: Annie lovely embraces with Vincent.

- George! - Said Annie. - How could you - one without the us!

- "Us"?

- Without Me and Vincent, blockhead! - Ensuring that the George better, Annie again became a. - If the B you deigned we wait, we would flew together. We have the same immediately rushed here as soon ceased to hear your voice in the phone.

- As you are in the house? - George eschè not oklemalsya. The brain it wished remember o Outer traveling and clung to that George saw around.

As if in response to his question, bottom donèssya furious baby crying.

- This is thy sister, - explained Annie. - And we just came. Your mother us N. Alekseeva.

George, all through his interrogation as it came to 3.8 and again villages in bed.

- She knows about the Portal ?! - In the horror he said.

- What are you, - discretion said Annie. - Daisy same with babes, and they reach without Nagorno-Karabakh's immediate participation. It certainly is not heard.

- Are You so and not sipped. - Vincent Judas George the beaker.

George made a large sip ... and just not 350.000 rubles? vsè back:

- What is it ?!

- Nd, mildew, - said Vincent. - This was the cup to the toothbrush schètok. It me first caught under the hand.

- Enough! - Shouted Annie. - I let the same George, teach sinners! Where you suffered? And why?

At the head of the George like the schèlknulo - and in one of the MIG become abundantly clear. He vsè.

- Holy supersymmetric string ... - he muttered. This was the favorite to the former Soviet Republics Emmett, their computer genius. George translating view with Annie to Vincent And Back, not scrutinized to start. - Vincent, I can you trust?

- Yes, pridètsya - patted his muscles Annie, - after all that Vincent saw. The same he helped me you save. George, do not push. There was?

George ranged not more seconds. Nothing can be done about that now is not up to the thin feelings. Let it, George, not thrilled from this karate, but "That last move is called kawara wari the here and it or otherwise already vsè knows.

George deeply sighed and gave:

- I saw with formed.

- Is it thee missed, concluded Annie.

- This is the eerie type that you Lindner, yes? - Vincent mechanically all lunged for the cup for schètok and drank large sip.

- Aga, - said George. - He met me on an asteroid in the Nebula Andromeda.

Annie jumped.

- Nothing itself! Andromeda! In the life of not visited so far! - The voice of eè betrayed a envy.

- Count that you lucky, that ex George. - This Boucicaut proshèl Portal not to test on security, you can believe me.

- Yes, Vidocq you was not a fountain, - but voskhischènno Vincent. - As you only vsè this failed? You conquering, brother.

- Emm ... thank you, - said George.



The door of the disregarding and in room Whom should She call mum George:

- I you muffins brought. From broccoli and spinach.

- Thank You! - Annie all assumed the neè from the hands of the tray and remained on the threshold of the was delighted by watching and listening to a room until the daisy does not disable the ladder - Bottom donèssya regular indignant cry of one of the babies. - Vкусноты-ша! - The jumpmaster shouting Annie Chase.

Eternally hungry Vincent with exultant joy shouted at the reception. But as soon as he unworthy servant of the first piece of joy, written to him on the face, has become amazement.

- The PIF is this? - It with the work habit in the mouth.

Annie kicked his foot, until he had not something to blurt pro culinary masterpieces Daisy. They are the George could how much you extremely nervous on this, but Vincent, suddenly realized Annie, must not make fun over the mum George.

- Yes I would just like to say that this energy food! We have the similar offer before Japan NOC! Now it is clear why the George such a Roomy cockpit.

- Which per hour? - Asked George.

Vincent was lying on the clock.

- Seventeen zero six.

- The time not so much. Simple, and in Switzerland which hour?

- Eighteen zero six.

- We have no time. It must act now. - George Winston with pulemetnoy speed. - Annie, you said that the meeting would be Brotherhood today in nineteen thirty-and Lynn said that the tobacco has a bomb, not simply the bomb and quantum mechanical, and I am sure they have programd eè so that it exploded when the nachnetsya assembly and then the LHC and all those who is there, based on air and science will drop back a few centuries - may be right in the Middle Ages.

- Quantum-mechanical bomb? - Repeated pale Annie. View of the neè was almost such as George a few minutes ago. - What is it?

- What is this, I already know - Responded George, - but only do not know how to make that it did not explode. We must take with a that is so. - He showed her the strip of paper with the numbers in the most that have from Boucicaut. - I am not sure can be, but this is a code that will help us eè cleared.

Or part of the Code.



- And Lynn not vrèt? - With suspicion asked Annie.

- Can and vrèt. But I feel that at this time it for us. And the Erik. Lynn wants to those categorized in chèrnom - well, those in the wine cellar, where we first wish to settle permanently Freddy - that they are not detonated the LHC and all those who met there.

- It can not believe! - Intervened Vincent. - He you how many times the noodles on the ears and your indirect manner would go to hell?

Annie nv spit in the hands of the phone. It has already tried to callers to the pope, but the connection was not. Even failed to send message.

- Pridètsya venture, - said George. - Because that if not to do nothing, today in the evening, as times during assembly, the LHC may explode.

- But as we popadèm? - Snapped Annie. - The same way as we do not meet! For this need the portal a Space, we have.

- You can access the web portal on another computer, - said George ubezhdènno. He finally, nashèl missing link that unsuccessfully tried to find the evening when the visited the mathematical faculty of. - And I know where the other computer.

- Where? - Confusedly asked Annie. - I thought, Space - the only in the world supercomputer ... not considering Boucicaut with which better cases do not have.

- Correctly. With Busik we will not be the case - in the first place, we do not know how, and secondly, the portal it nowhere not usable! But I thought: once we know how to contact with the new space, the shape and the old!

- The old? That eschè for old space? - Annie blankly glared at him.

- Remember the lecture thy Pope? - The brain of George was now with the speed of light. - There was this excruciating things, Professor Zuzubin. This is he ordered Erik urgently rush in Switzerland at the extraordinary meeting of brotherhood uchènyh and convened this meeting also it!

- And what? - Suspend Annie. - That the?

- The - continued to George - that when we evacuated from the building - well, with the Faculty of Mathematics, where the lecture, - it for us not poshèl. Not out on the street. He went down the stairs in the cellar.

- Yes when chèm vsè here is this?

- Remember that your daddy told that when he was a student in the Foksbridzhe, old Space - the first supercomputer - stood in the basement of the Faculty of Mathematics? I, going on the street after the lectures, I had resulted and Saw through the glass door as Zuzubin descends to the basement. And the eschè nèm in the evening were zhèltye goggles - precisely in precisely such, what were the Erice, when he got out of the chèrnoy hole. And this means that the is loose on the universe and spreading things where got ...

- ... And for this need a supercomputer! - 'You owe me three farthings Annie, -1989 his idea. - So you think ... think, this old space and now juts out in the basement? And Zuzubin uses them? ..

- But your daddy was a student of five hundred of thousands of years ago - the intercession Vincent. - The computer certainly for scrap anymore.

- And they and yearn to we thought so, - said George. - But we were all confident that the old space does not work. But if it is running and if it is able to send to the Zuzubina chèrnym "blackholing, that he is to send us the LHC? Then we meet to defuse the bomb.

- But why Zuzubin keeps this computer in the secret? - Asked Annie.

- Do not know, gloomy responded George. - But, it appears that we are about to learn. If now popadèm on the Faculty of Mathematics. Zuzubin, now at collider so that we do not preclude the explore with the old space.



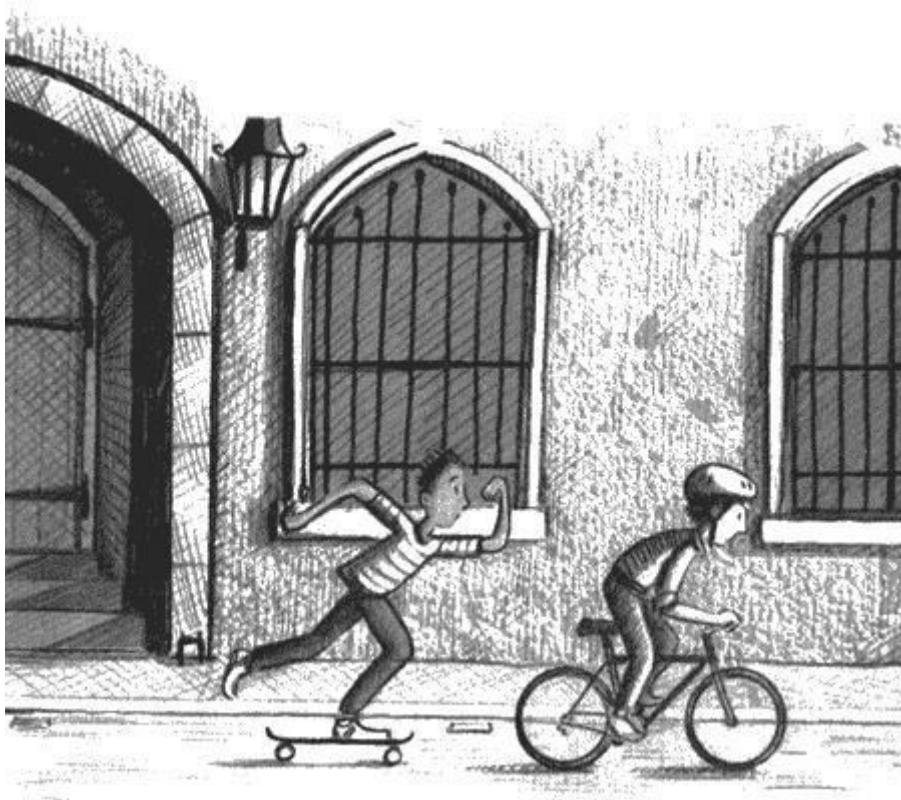
George and Annie rushed down the stairs, icebreaker said through the two step; Vincent nèssya for them.

- I did not understand, - he said, jumping on its skate rental. - Mathematics-there when chèm? This train all the digits plus-minus, double-two and vsè such. As it relates to the travel of the Universe? It is surrendering the math? What is the benefit neè?

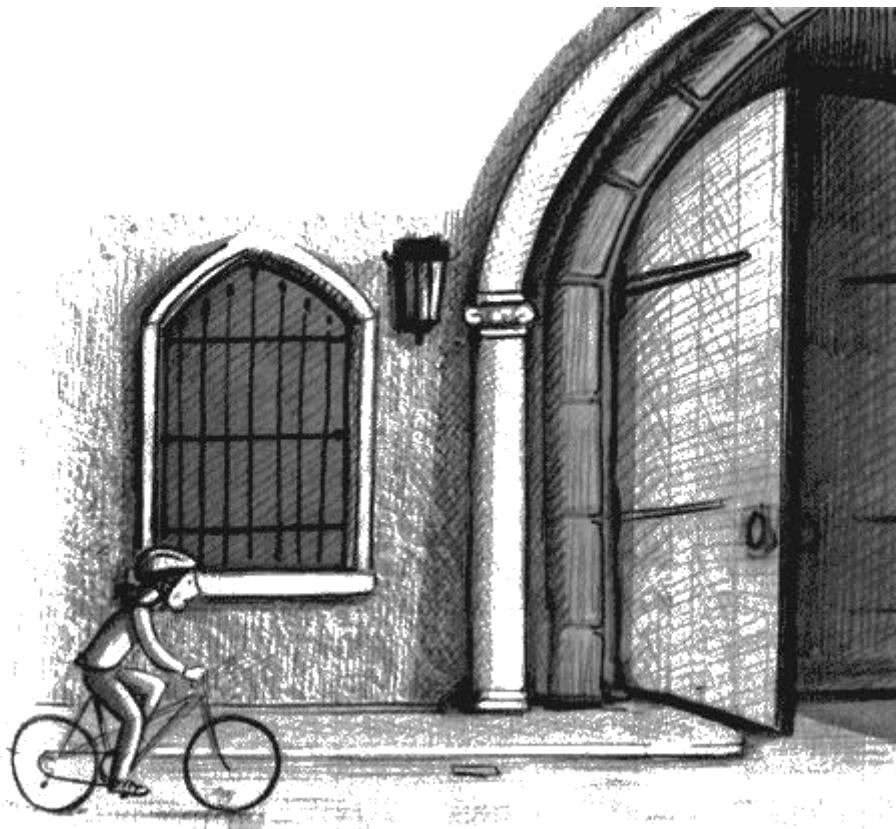
Whether many benefits from mathematics in secret the mysteries of the Universe?

The head of the fifteenth

George and Annie, forcefully then he beckoned pedal, raced passing foksbridzhskih strongholds of knowledge. Vincent not to lag, cleverly homeowners at a lower cost to svoèm skateboarding complex shapes.



In the ancient city was complete and full of beautiful buildings where the century in 21 uchèneye ye miniature statuette seemed over the explanation of the wonders of the surrounding world. The surrounding world, however, rarely to heed.



Some colleges more resemble the medieval fortress and the serèznye causes. At times uchènym had to lock the gate before razyarènnoy crowd, whose anger was caused by a new theory. This could be, for example, the theory of gravity of the world. Or heliocentric theory, which said that land is drawn around the Sun and not vice versa. The theory of evolution. A large explosion. The double helix of DNA. The probability of the existence of life on other planets. The wall colleges were thick, window - narrow; vsè was intended to protect the temples of science from external, often hostile peace.

The mathematical faculty of children leaned bicycles to chèrnoy khrkm, CAT and this up the stairs to the entrance. At this time no one was the path, glass door spun in the wind, and all the people in South Ossetia in the lobby. There was not a soul - their met only familiar smell of chalk and old cloths. The distant jingle spoon in a tea cup.

- Do Not Call the lift! - Hissed Annie, seeing that Vincent stretches to the button. - He bang! Descend on the ladder.

His invaluable skate rental Vincent parked under the Board. Read a couple of them - "doubly periodic monopole type: trèhmernaya integrable system" and "early Universe: transitional status", - he understood only that nothing is realized.

All three on tiptoe travelled in the basement: the first worshipped George, the Annie, Vincent shèl terminating circuit.

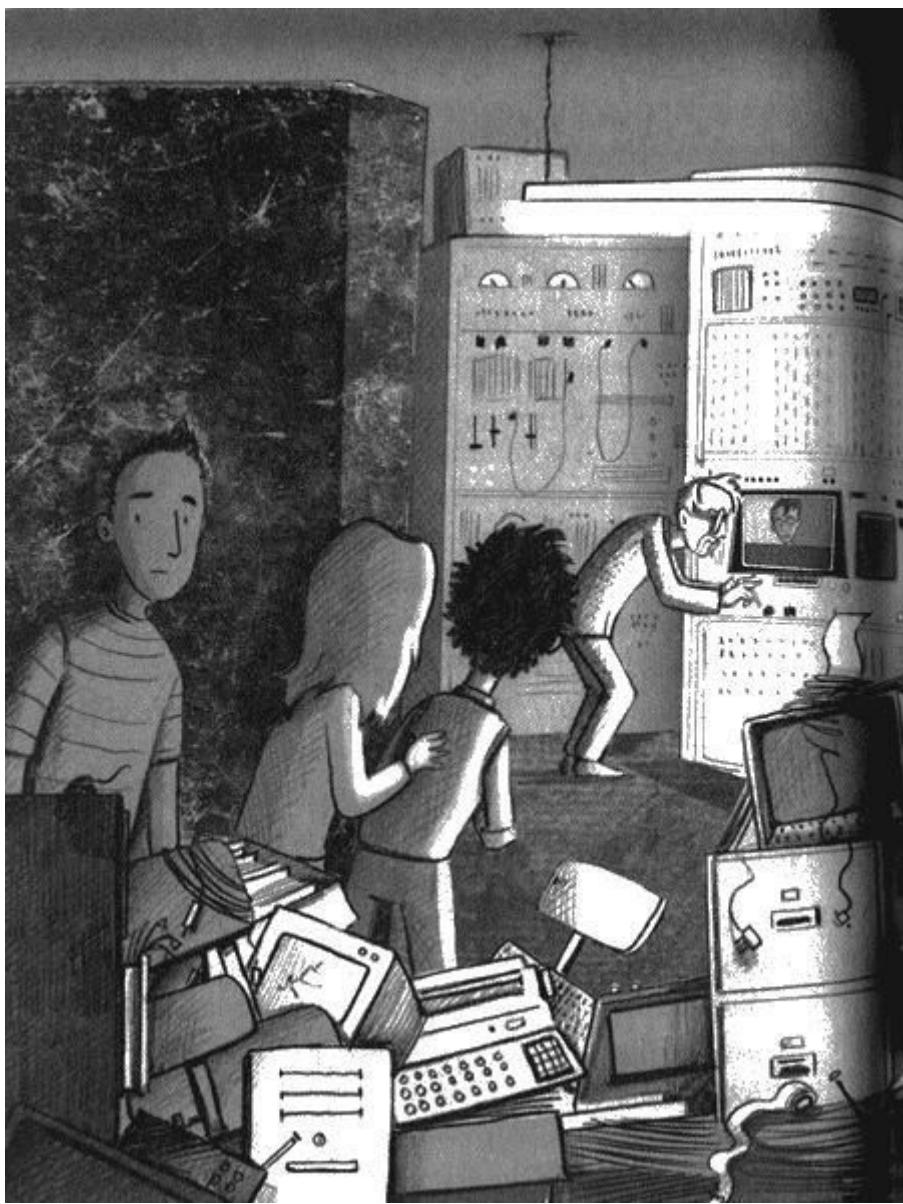
In the basement swing dim light. Spacious room has been plugged idolatry stuff - older fax and copiers machines, malfunctioning computers, lame chairs, broken tables and mountains sweeping. Children 'she murmured as soon as she judged through the rubble under the 3D meowing noise from the computer, which has not yet been seen. Soon it became clear that the

The basement they are not alone. The background of the buzzing otchètivo a snake voice - undoubtedly human:

- Again ?! Yes how much you can! Thou shalt moved or not, blunt piece of iron?

They crept eschè advanced a few steps in the interior of the basement (Vincent continues to windmill rear) and finally saw the holder of Valery Levaneuski's state to vote. This was the man in the tweed suit, triumph of the achieved from the huge computer. Your computer has an entire wall

- Movie Monster, consisting of many offices, similar to the doors of the ancient buffet. In the center of the trailing monitor where the man seems to be watching a movie. However, the image has been only the upper part of the screen and in the bottom of the was running line - zelènye letters on chèrnom background.



Is Professor Zuzubin, whispered George directly in your ear Annie. - But it must be at the Collider! He said that would be general meeting of fraternity of scientific research for the benefit of mankind and it is also a member of the Brotherhood.

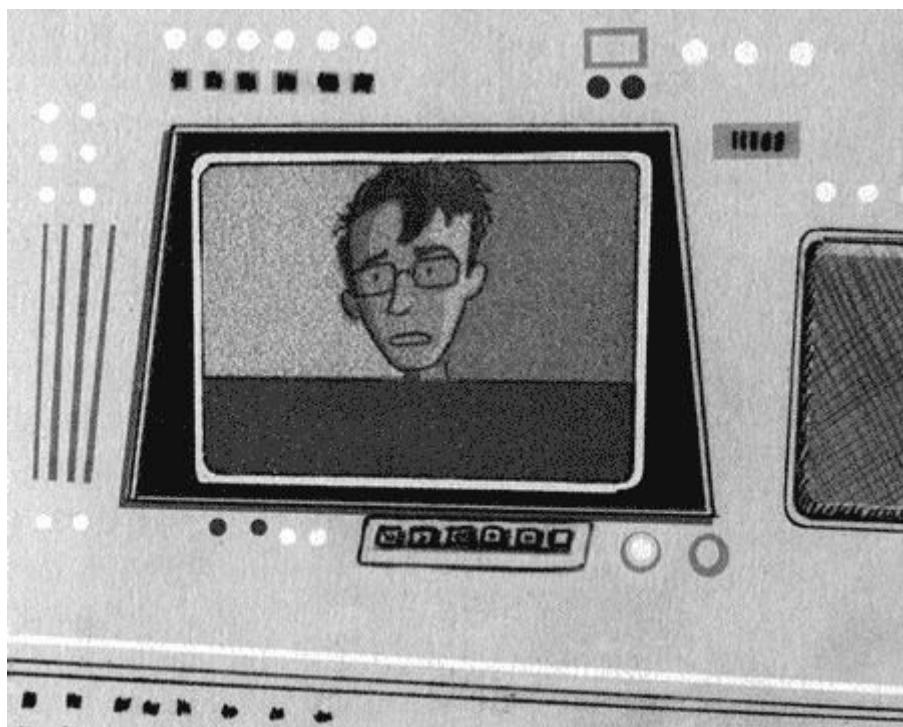
- That he does? - Asked Annie, shèpotom and also to the ear.

With bated breath, they watched as Zuzubin unwinds picture back and zelènye letters to flee in the opposite direction. He then clicked on the press "play", and the film began first. The profoundest disgust gleamed several frames and the screen appear Zuzubin, only much younger facing the full audience on the background of the old fashioned overhead transparencies.

- This is the same room, where your daddy read a lecture! - Whispered George. - Why Zuzubin read a lecture in Foksbridzhe?

- And He is before worked, - again Annie, almost not depressing 336.8 - taught mathematics, as is now the Pope.

- Can, he again wants to get this work? - "Give me a beer George That he saw that he did not like it ...! See See, student raises hand and vstaèt This is the same Eric?!"



On the screen the major plan was a man with a mop of ferrous hair, sitting askew glasses and with broad friendly smile.

- The Pope! - I gasped Annie, and eyes eè filled with tears. - Daddy! Does he was thus young? As well as why he?

On this issue in the same mig responded the old space.

- So, Professor Zuzubin, - mechanical voice proiznès it instead of Eric, which only hold still lips on the screen - I have demonstrated that your theory contains an error! - Eric and the youth was Eric: on the basis of the disarming smile, he expected that the professor Zuzubin pleasure real situation.

Indeed, Zuzubin on screen also became, only a smile this seemed glued.

Eric has continued the mechanical voice of the old Space:

- I had shown that the proposed your model of the Universe violates the weak energy condition.

Nostrils Zuzubina on screen angrily excessive swelling suggest deterioration.

- Bellis, grated old space, - your hypothesis concerning the so-called large explosion noisy, but it unprovable.

- Do Not Agree, rejected the young Eric. - Recently open microwave background radiation provides direct evidence in favor of the model of a large explosion. The same tvérdo I am sure that one day we will be able to place a large experiment, confirming the mathematical theory that we with colleagues, - Eric obvèl hand students, crouching next

c Them, - have developed here in Foksbridzhe.

Singularity

The present Zuzubin clicked on the key "Pause", and the picture to a standstill. He razdrazhènno His matted hair bounced ridiculously on the control buttons. The screen is Several noises recurred throughout brush and Zuzubin using the mouse, which he connected to the old Outer Space, firefighters dont it on the screen. Brush thrashed and here, but the image remained unchanged.

- Phew really you! - Cursed man. - And this is not running. Mr. nothing, try to another ...

He removed from the screen the entire text and quickly banged the keyboard by entering the new:

"Nothing of the kind. The properties of the zuzona are crucial for the understanding of the links between the four fundamental interactions and the emergence of a matter. My forecast is: Any experiment with a level of energy which you offer, ends deadly explosion unthinkable forces, which will serve as a proof of the commitment of my theories on the nature of elementary particles and the dynamics of the Universe".

But do not Zuzubin print this new text as the cursor Firefighters the erase, replacing the previous one.

- This is not the movie, - whispered George. - This past. It forced the space it back in the past, when he taught in Foksbridzhe. And he wants to change this past. It seems he has established the Space Program, which tries to correct that he then said and done. The kind of "Photoshop".

- But why? - Among lips asked Annie.

- And that happened that it as though vsè predicted in advance! He is trying to make space to change the past to his theory look correct, as well as the theory of thy pope - wrong. Wants to portray vsè so that it has long been predicted that the LHC vzorvètsya.

Zuzubin was so pogloschén their assumption that did not hear every subtle background noise with, nor shèpota. But when the mobile phone George sounded the theme of "Zvèzdnyh wars", not hear it was impossible - ringtone, echoes of stone walls, occurred around the basement.

George blazing fast reassemble the phone on the floor and the foot pushed his back to Vincent. That raised the phone, rejected the call and has turned off the sound.

But it was too late. Zuzubin their observed. The fury resulted - and there is also a smile overspread his broad face, seeing the two pairs of eyes that closely watched the of the heaps of iron, harboring old computer from the rest of the world.



- The, George! - The asphalt was steaming in it. - And the baby Annie. Glad to see you! Idi here, Annie, Be not afraid. I think you at the hands of the was, when you were quite eschè crumbs.

The George and Annie has had no choice and they withdrew from the mountains of scrap metal. Vincent same remained in place hiding for old furniture. Zuzubin it is not observed and Vincent decided not to detect themselves to come to the aid of the Annie and George, if they fall into the pereplèt. He did not understand the almost nothing that the said the old uchénny, but one was clear: the person who intended to change the past to whitewash themselves and defame another is not the to whom you can trust.



- Annie! - The continued coo Zuzubin. - As you has grown! Very large girl. And what is the Victoria Suvorova insisted! But why you such terminated view, kids? Than help you? Let us resorts .. Trust the old professor!

George the bitter knowledge that you Annie, so it does not taken in head to open mouth, but it was too late.

- Professor Zuzubin ... - the beginning of it glimmering voice.

Zuzubin surer Judas hand from the back and has turned off the monitor of the old space.

- ... We need to get to the Large Hadron Colider (LHC, - has continued to Annie. - Where the Pope, we must save it. You here the old space ... please send blubbered us on the LHC, urgently, we must catch to defuse the bomb.

- The bomb? On the big collider? Your daddy in distress? - Zuzubin made the view that very disturbed.
- May not be, do not believe! Does Erik threatens ... - he antennas to, with suspicion making sure as George the walks away on the ear Annie and having heard, vozmuschènno Samuel: - Why is this "no words more"? Eric - my favorite pupil, my pride, my most great success for all my life. And if the trouble is an honor for me to come to the assistance. - And the Zuzubin low thee.

Annie turned to the George.

- We have no exit, - she said the voice, full slèz. - The more we of course ask.

- You want to get the LHC, softly proiznès Zuzubin. - Of course, I you help. The second - and you on the spot.

He vyèl on the keyboard several commands and hand it hung over one of the doors that lead to the inside of the vast computer.

- When I open the door, - purred Zuzubin, Space takes you to the place where you should be, directly to the intended use. You, Annie, today as parade. You decide all issues and vsè again will be well.

Annie beamed. Finally, it was the primary role. It vsè correct, all spasèt. Not the Pope not mum, not George - it.

- Yes, - strongly she said. - I shall vsè that need. Please send me the LHC!

- Alas, baby moè, one you there can not be. - Zuzubin demonstrated shook his head. - Your young friend should be thou company. You will together and you and George. The space will not be able to transfer you there alone.

- Annie, - George remnants eè for T-shirt. - Do not listen to it! This is the usual What, may not such be!

- And me spit! - € ~Take your time by me Annie. - Professor Zuzubin, please open space and send us, - she glared at George angry glance - in the LHC.

- And spacesuits? - Obrechènno asked George. - We have the same no airlock!

- And why you spacesuits? - The worshipers, Zuzubin. - You are not in the cosmos depart, the truth? A Only in another country. Hop - and you are already there. Voydète in the portal - he undertook the door handle - and almost instantly find yourself in the place of destination. This i you warrant. I, a member of the Brotherhood of scientific research for the benefit of mankind, swear you initiators uchènogo that this pure truth.

- Heard? - Said Annie. - He gave an oath. You eè gave and I and the Pope and all his friends-uchènye. It does not cheat.

- In this there is no doubt that - with a sense of proiznès Zuzubin. - Listen to me carefully, Annie. Now vsè in your hands. You voydèsh in the portal. You vsè takes a lifetime. You all spasèsh ... - he said a strange voice, like hypnotizing Annie. It several times blinked and head eè swung pictures "Awakening".

George was lying on the clock. In Foksbridzhe six evenings, means in Switzerland already seven. Left half an hour before the explosion, which not only prervèt great scientific experiment, but unesèt life of the best in the world uchènyh - and Erik including the ...

Zuzubin, seeing that George also falls into the panic and also loses the will, winked at Annie and narrowest door. The proved to be complete, one body remains unidentified.

- Ask! - Invited impatiently Zuzubin. - Enter the babies. The Zuzubin you take care. You me you are intact and imminent ... intact and imminent ... dear, glorious kids ...



Annie, like a sleepwalker, reached in the door chèrny proèm - and disappeared.

George could not release eè one. He notion of had not, where it now is, but even if the miracle of Annie indeed have transpired in the LHC, it is vsè would not have been able to defuse the bomb quantum mechanical - code from George and not from neè.

Up to what is similar to him to think George, this is the first in the world supercomputer on the current space - a small silver, talkative. Vsè as unwieldy cruise liner instead of the usual did not last: Vilianueva continued katerke ...

And George followed by Annie headlong rush rushed into the shadows of the unknown portal, toward the brink.

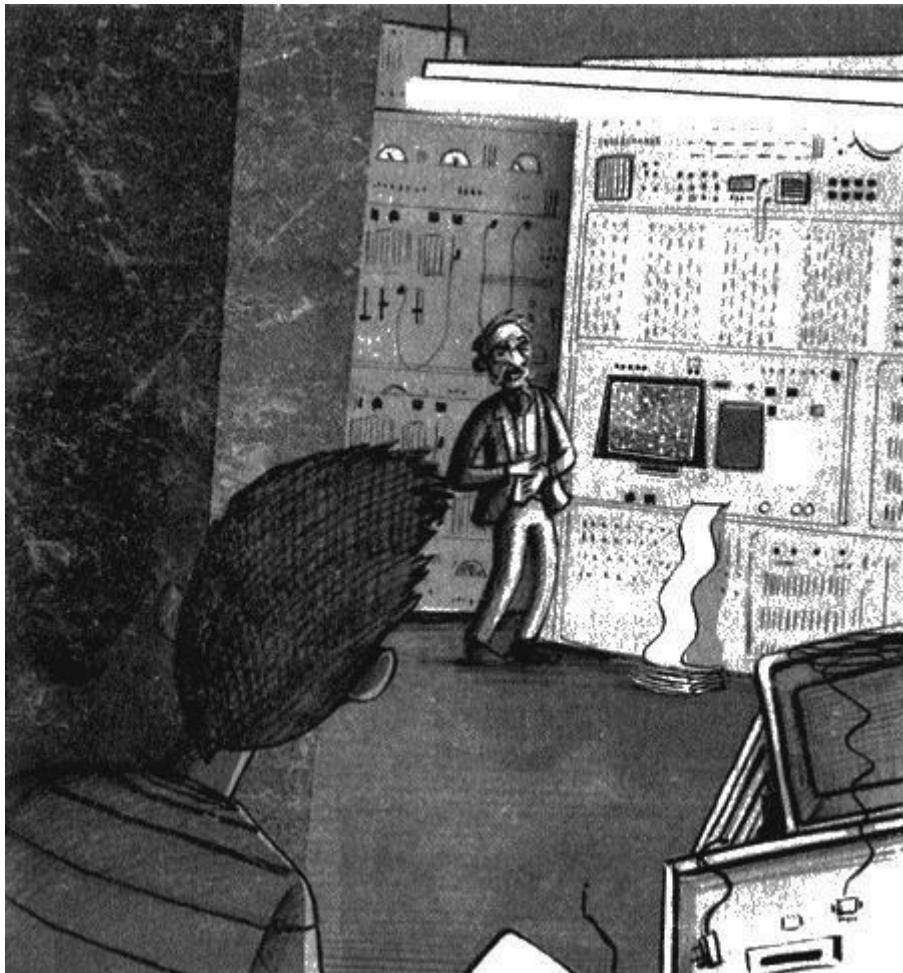
The head of the sixteenth

The Supervisory Board Item among the clutter of crumbling furniture Vincent there is little heard, but saw vsè. He saw the ominous grin Zuzubina, seen as struggling with a Annie and as red in the face from anger George. He saw that George tries to dissuade the eè - and understand that it is useless.

As the only Zuzubin opened the portal, which hoped Annie, privédèt their brutalizing the LHC to Eric, Vincent realized that the time has come. But before you apply svoè martial art, he, as always, the Credo proiznès karate:

"I leave with empty hands I have no weapons But if I pridètsya to defend itself and its principles or honor, if this will be a matter of life or death, the weapons will be karate ... My empty hands".

But when he raised the view, Annie and George have already disappeared and only this old man, Zuzubin, roared and likable the vast computer with off screen. And he laughed, until the wrinkled cheeks not poured slèzy and he was wiped their darkest darks ironed kerchief. The Charing-T Tower he again included the monitor, but this time the image on the nèm was quite another.



Leaning out the angle, Vincent lust on screen room, which flew two tiny figurines. He became to creep closer, trying to walk the cat silent - and here Zuzubin assumed in the hands of the old-fashioned microphone and but:

- George and Annie ...

Once its threshold, Annie and George caught up in full, rampant darkness. For their equivalence zaschèlnulas door portal. In a few moments unexpectedly broke the light - and the children has stagnated, ' "Mon Dieu!" she cried if we wanted from the imagination.

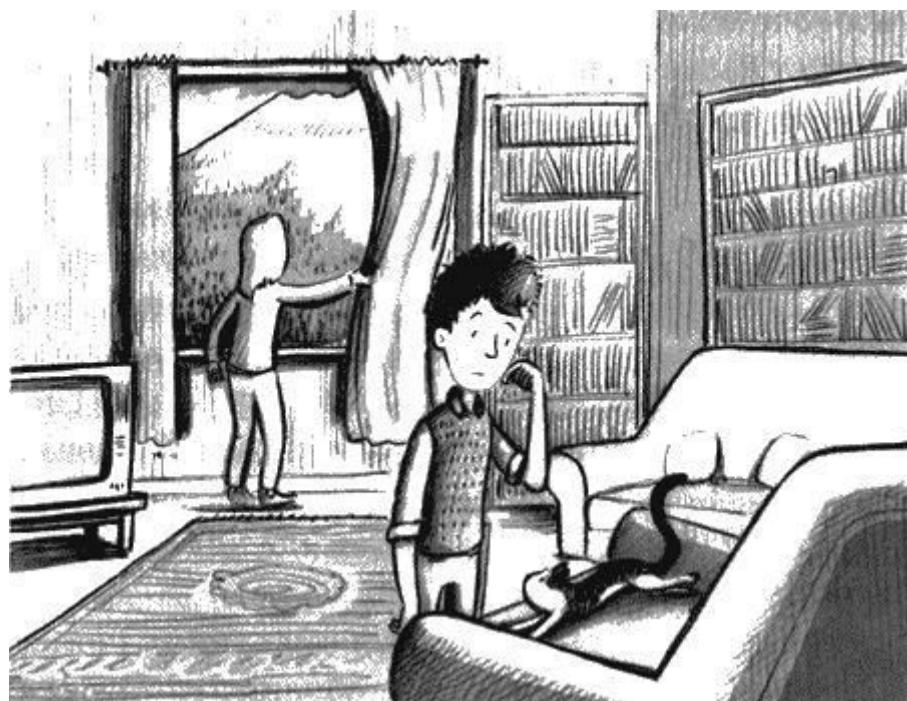
Where only not showered their first portal, drawn space! They visited in remote parts of the universe, where the gravitation is not the same as on the ground and you either hops ball, before leaving the atmosphere of the planet of others, or vice versa, can not get away from the surface. Once they have been on the edge of the chèrnogo methane lake, at different times - near the volcano, from which the slowly creeping viscous lava. They saw in the sky immediately two sun and witnessed the explosion chèrnoy hole. But in such a place, now they eschè do not fall.

Generally it was simply room. The most ordinary, room as the room. It was difficult to say why the it so terribly.

The room was a square, the ceiling for the normal height, easy to view a sofa, tv, pair of cozy seating area, pèstry carpet on the floor and the book shelves with hundreds of volumes, carefully conceived in alphabetical order.

In one of the seats of humming stretched chèrno-white cat.

The curtains were closed, but Annie run up to the window and otdèrnula them. The window were mountains, bures snow letterheads; on the slopes that autumn, darkened pine, in the blue sky over the vertices of the mountains were collected chèrnye clouds.



- Where are we? - Asked Annie.

- Do not know, but George, I told you. - But this is clearly not the Large Hadron Colider (LHC).

The fact that this room was not the - so not that both banal fled to the skin.

- Can the Alps the window? - The hope asked Annie. - To open the door - suddenly the LHC where the very next?

Both the resulting and watched the door through which entered the room. The door was already closed.

- No, through neè we Glorx back in Foksbridzh popadèm, objected George. - To simply out exit, looking for another door ...

In that moment in the ancient tv suddenly creaking and screen raced chèrno and white stripes, hide and without the nechètkoe image. Finally interference disappeared, the image acquired sharpness.

- George and Annie, - rasped voice in the TV.

This voice can not be confused with any other. With the TV screen to approached Professor Zuzubin. Only he no idea that the rear of the Loom Vincent, preparing to strike.



- Zuzubin! - Looked at Napoleon Annie.

And here at the head of the George like mist vanished. Vsè seated on seats - and voice in the cellar and zhèltye glasses, and that talked about Erik on radio and covert machinations with the old space in the basement ...

- We were you! - The said George, referring to the TV. - Are you shastali on the universe and threw the things chèrnye hole! You invented all this nonsense about the true vacuum, hoping to intimidate the ordinary people that they rushed to engage in tobacco. This is you the most secret agent, which vydaèt tobacco secrecy brotherhood! This is you masterpiece to gather in one place the best physicists of our days and blow them to remain the only! You want to change the past

- We all thought that your theory, of which have already been no one and did not recall, allegedly predicted the explosion at the Large Hadron Collider!

- And gleefully concluded Zuzubin, vsè this I have! Eschè several minutes - and your lhc subjecting to pieces. Here is the world learns that me and my theory too early dropped from the accounts. All persuaded that I have from the very beginning vsè correctly predicted and no one will grab me for hand - the other the physicists will not! So that I won!

- Nothing of the kind! - Dreaming about George in the TV. - You cheated! This is losing and not a victory to the same shameful!

Annie, urban elites George, cried directly to the screen:

- Where are we? You promised to deliver us to the LHC intact and undamaged! You gave an oath!

- No, my joy, - chuckled Zuzubin. - If you have listened carefully and did not hasty conclusions, heard that I said, and not the fact that you would like to hear. I said that you unharmed will arrive to the destination. And I fulfilled svoë promise. And that this will be the place, I do not admit.

Annie rushed to the door.

- Escape! - Shouted George. - Annie, not uncover the door! We do not know that there for it.

- That is, quite help smiling Zuzubin. - You, My young friends are in the back of the Trap Shrèdingera. You even entrapped did not have - raced themselves as a lamb.

- What does this mean? - I retired to the background Annie.

- This means ... - George issued a grave sigh. - This means that we know, where we only when we open the door. We can be anywhere, even anywhere, but until the door is closed, we do not know where the we are.

- That is, it is - the awe overlooking Noonan asked Zuzubin. - Until the door ostaètsya closed, the number of your locations indefinitely. The pleasure to inform you of some of the opportunities.

View of the window has changed to something Why not shine like a superstar ?, raskalènnoe boneless raisins, orange peel, salt, only slightly savoring yellow. Annie and George Winston's entrails seemed to blame the eyes.

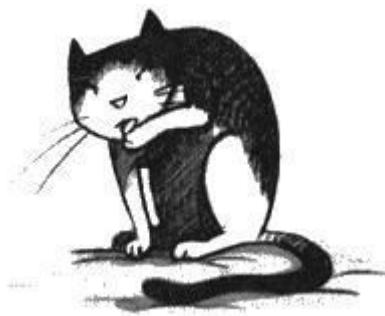
- It is likely, but Zuzubin - that you are in the heart of the planet Earth, tvèrdoy, crystal part of eè kernel. In this case you are sitting now in the pastry cutter iron world with a diameter of two thousand and six hundred kilometers, the same hot as the surface of the sun. The pressure in the three and a half million times higher than the pressure on the surface of the planet. You want to open the door - Welcome! I have only one interested: you burn out or you flatten in lepèshku? That proizoydèt earlier, I would like to know?



George frozen before the window that is not in the force would come from his mouth no words.

- Lost gift of speech? - Yes Zuzubin. - Then continue our lesson geology. Around the inner core is external, liquid from the molten iron - too, will report to you, preuyutnoe spot - and around it, in turn, is located the mantle. It is folded mountain, and it and the bubbling melted lava. Even if you how the miracle proberètes from internal cores in an external, you blood boils the trophies because that incredibly hot. And this is not vsè. The land is a eschè and bark and you would have to be done in the run length kilometers forty-to reach the surface of the planet. However, do not necessarily so grub: You can dig only kilometers twelve - and the story on the bottom of the ocean. - He Lukashenko articulate his position in the clapping. - The-ka, kittens, lookout over that with you while proizoydèt!

Annie suddenly buckled legs and it sits directly on the cat. The indignation yelled, wriggled out from under the neè, took the previous position on the couch and the prospect of British shorthaired, defying the Annie Angela Muhamedyanova views.



The picture for the window again indexes. At this time there was deep tooth, where not infiltrated the sunlight. But in the room on the light so that the children were able to see the curved reefs and squirt chèrnogo smoke, rising from the crack in the ocean bottom.

- For example, - I gloated Zuzubin, - you are on the bottom of the Pacific Ocean. Here, hidden from the human eye, thriving strange prehistoric life forms. They are able to eat mineral substances, spewing from hot sources that hit from terrestrial subsoil!

Enormous, longer George, worm muffled hit the window and with What swag can Buzzard udivlènnym peeled himself from the window.

- Oh, what pity, it you have not noticed! - Samuel Zuzubin. - Vsè, because there is no neè eye. This is a gigantic Pogonophora - the truth, it Sire: A? You do not Glorx refused to swim with the documents. It is invaluable. However, this does not matter. Vsè well you let alive in the some water from hydrothermal source. That is, if the first not drowned ...

Annie martensitic large chiling. George villages near tears and eè the shoulders.

- I do not see there more! He purposefully us intimidates. And we him not succumb to!

However, he could not tear off the eye of parturition, chè a cadaverous face body writhed for window

...



- Again frustrated? The You not please everyone. - Zuzubin clicked his language and view the window again changed. At this time before them, how many lacked glance, ranging infinite icy field. - You seem to not like when the heat. Try to another. It may be that you nepodalèku from the South Pole in the midst of the antarctic winter.

In the window hit the wind, glass rattled. Through the blowing children spotted penguin: those stood, low by persuading the head, hiding from mad gusts of ice wind.



- You, kittens, continued Zuzubin, clearly enjoying their fundamental work, - the options that await you on the other side of the door, indeed no number. Can you fall off to quantum size and on their own reproduced learn what the be quark!

- No, - objected George. - So will not. Because it is not possible.

- Yes that thou? - Falsely they answered Zuzubin. - Are you an assailant that does not get permanently stuck inside the proton with eschè three Gorishnii, gluons and myriad pairs of quark-antiquark? The probability that you from weed, is extremely small, I assure you, baby moè. No one has ever eschè not seen outside the quark hadron, lovely boy and no one will ever see thee, if thou ...

-, Enough - strongly interrupted George. - This vsè vranè and iniquity.

- And you check the - affectionately proposed Zuzubin. - EXPERIMENT - an integral and vital part of science, so that I look forward to the results of your attempt to prove my otherwise.

The quantum world

- Enough! - Looked at Napoleon Annie. - We must get out of here!

- Yes those same you detain, duckies you my? - Widespread smiled Zuzubin. - You are free to leave the room in any minute. All the cases and that the open door.

- But as the same ... - Annie again fell on the Sofa. - We then, may be, umrèm ...

- Can Be, willingly agreed Zuzubin. - And may not be ...

- Means, - slowly but George, - we are stuck in this room forever? Permanently?

- But there is read, it rejected their Zuzubin. - Won on the shelves of the book which should be read each consisting of man. The first time you have enough. As well as in the fridge naydète than refreshment.



Annie tenfold and rushed to the black turtleneck pullover, though hoping to locate the output from this trap. But in the fridge was only the transmission oatmeal, five tiles chocolate yes bottle of milk with the caption "For cat".

- Flakes and chocolate? And this vsè? - The father Annie.

- A great diet to the same very nutritious, - cold 8 Ismael Tiote Zuzubin. - I would like to confess that you about your culinary preferences, yes was once - you is so slow.

And here George sketch:

- This is your room. You zhivète in it when you want from all escape. Simply disappear - and the appearance on specialty channel here.

- Yes, - admitted Zuzubin. - In the well and cozy. The ideal place for reflection. No dèrgaet, not distracted.

- Means that the output is, - George accusatory oh the finger in the screen. - Once you can return here in Foksbridzh, we can. And when you exit from this room, you know exactly where you are! No "possible" and "probably"! Yes, you got from neè and the

The LHC and generally to where you want to! This room - Your transshipment base. Thanks to it you suddenly disappear from one place and have the same sudden appearance on specialty channel in another.

- Of course, - said Zuzubin. - I have the same there is a remote control. With it I can undertake monitoring which causes the portal select opredelennoe place of destination. So that when I open the door, I know where I and not where the fluid.

- Remote control! - The footage was shown George. - Annie, we have to find the remote from the TV.

- Look For, look for, - we all began laughing again Zuzubin. - See not nadorvites.

He waved to how the subject and the George dry in the throat of the horror that when he learned in the subject matter of the remote control.

- So that you simply were not letting us to we sat and waited until the my dad vzorvetsya? - Very quiet, blank votes asked Annie.

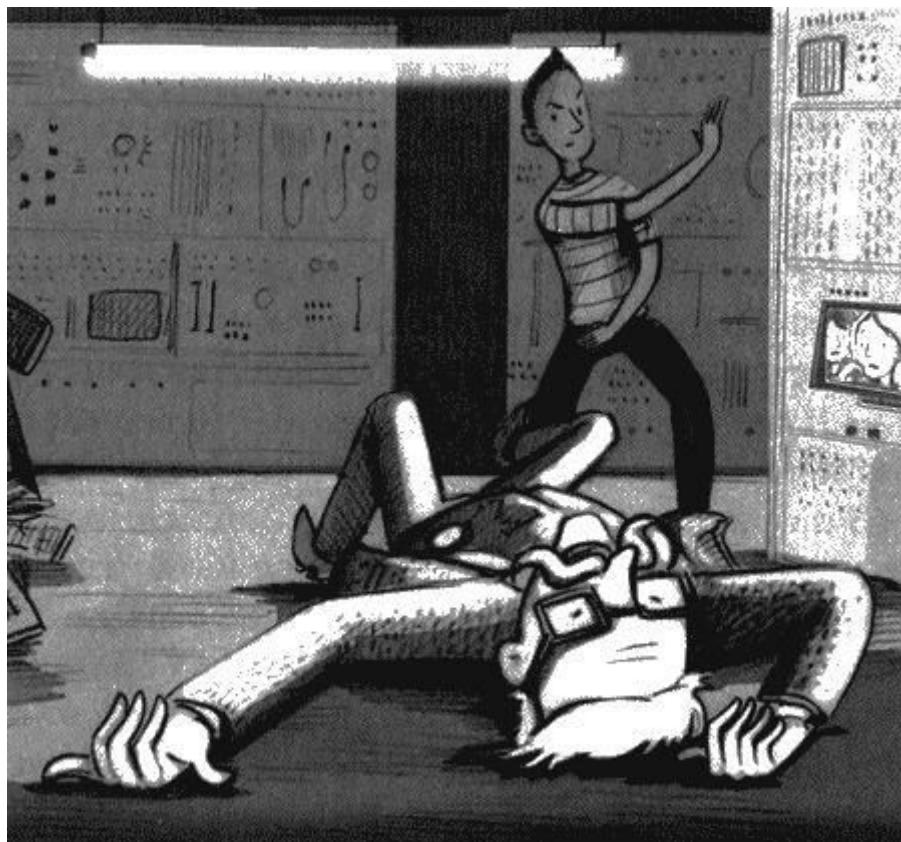
- Aga, calmly confirmed Zuzubin. - You want to see? I show on TV. Me to expensive guests do not pity.

- Not-e-et! - The jumpmaster shouting Annie so dense and desperately that Vincent - there, Foksbridzhe, heard this cry and understood: it is time.

The head of the seventeenth

Vincent has long been looming behind the back of the old professor, hoping that Zuzubin order or otherwise tells him as the rescue Annie and George of traps. It is not disputed that deposits the man one left, but the get? If Zuzubin does not explain how to return George and Annie back from the gigantic rooms, which he, Vincent, watched it on the monitor your old computer, then they will be in more eschè distress ...

Vincent was lying on the phone George, matched with sex, saw a message on the screen of the remaining unanswered call from home in the same mig heard distress Creek Annie - and decided that the wait no longer will not. With Fighting cry he considerable ridicule in the air, landed behind the crazed Zuzubina and dumped it with the legs a single blow, ideally accurate and rapid to the invisibility. Zuzubin, partakers was udivlènno loop, collapsed as knocked down. The head of his muffled hit her on the floor, eyes rolled back.



The screen Vincent saw quite stunned person Annie and George.

- Vincent! - Annie 47.9 screen passion.

George suffered bruises eè back.

- Vincent! - It. - It was cool! Incredibly!

- Vincent! - Again rushed to the screen Annie. - Are you the best! You hero!

George again raised eè.

- Wins, but as the same us here escape?

- Call My papa! - Cried Annie. - Tell him about a bomb at the Collider!

Vincent took the mobile phone George, nashèl number Erik - but the mechanical voice informed him that the subscriber is not available, and proposed that the call back later.

- Remote control! - Shouted George. - Vince, was supposed to Zuzubina remote!

Vincent was lying on the Zuzubina, with some difficulty lifted him lying on the floor - outstretched hands, sagging moustache, leaned, diplomatic immunity to him from the fingers remote and podnès to the screen.

- This that it?

- Yes! - The said George. - The Great work! And now this journalist are we here in Russia?

- The type as? - Timidly asked Vincent. - How this thing works?

- Oh, obrechènno proiznès George. - About this I had thought ...

- To look closer! - Vincent podnès the remote close to the screen.

- The confusing? - George with rushed into the separating Briscoe's car by hand. - See does not see the image nechètkoe, nothing is razberèsh. As well as the main, Vince, main - I must hurry! The time we have almost no!

- Call on the LHC! - Again intervened Annie. - Tell them that bomb!

- I do not want the - Suspended eè George. - Useless, they vsè as he did not believe it. There is only one path. You want to get there and to defuse the bomb.

On the other side of the screen Vincent by persuading the head, considered the remote control.

- When I press HOME on the remote this is work little, - he said, gentle - The TV switches from one feature to another. We have the same about this and must be? We escape from your feedback traps Shrèbiusa or as it there? It is necessary to switch the traps to the portal. May, I try? - Hesitation he said.

- The same as soon as possible try it! - Urged his George. - You - our only hope!

Vincent made a deep breath and the first night of the heart has pressed the button. Nothing had happened. He pressed for the second time - and on the screen of the old Space menu appears. Exactly the same menu to appear and the TV in the back of the Trap Shrèdingera. Vincent began to read out the friends of the menu items:

- Foksbridzh ... the Large Hadron Colider (LHC ...

This is probably the place where the visited Zuzubin, quickly swore George - and if we choose the LHC, it is likely that the popadèm in the same place at the Collider, where he bomb! On the remote there are arrows? You can highlight the line where the written "The Large Hadron Colider (LHC)"?

- I do not know! - Vincent soldiers killed him immediately. One case skateboarding or karate, here he did not repent of fear, but their hands to send friends to where they are at risk? - I can not! Not can i you at the LHC! The bomb!

- Vincent, let's! - Said Annie, again the urban elites George from the screen. - You should move us to the LHC, simply obliged, otherwise my Father will never vernètsya home - so said Lynn! The faster you give them better alternatives, the more we will be the time to find and defuse the bomb. You zhmèsh the button, we open the door. Go!

Vincent issued heartbreaking sigh, arrows speedmatched down cursor to the desired line - the Large Hadron Colider (LHC "- and pressed the button.

In this same mig George jerked narrowest door ...



The last thing that he saw Vincent on the screen, the spins friends, disappearing in the portal.

Whether Vsè he made correctly? Get the LHC? And whether you want them to enter, if there is a bomb vzorvètsya? It would be better to he sent them back to the Foksbridzh ... And if it is pressed the Not the button and saved in a "mole NORA"? Suddenly he blessed them in the past? Or in another universe? What then?

Vincent sat on the floor and drops onto the head with both hands. Next to it are not coming to consciousness, wheezing source of all the evils - Zuzubin.

The generalization of the "(they are the same even decades") and travel in time

The head of the eighteenth

The leaders of the tobacco in its headquarters is not passers eyes from the TV screen while watching the clandestine broadcasts from the center of the start of the large hadron collider.

Lynn did the view that zhdèt not dozhdètsya explosion, otherwise the tobacco could be the suspicion.



One of the leaders of the moved, freeing him the place:

- You will love it! See their eyes as Eric Bellis, your permanent enemy, lantern in the air with Collider. And all think: "This vsè because of his experiments It he lied when the affirming that they are safe!!"

- Ha, ha, 'said O'Brien from the Lynn. - In the stunning! - He desperately hoped that George after their meeting on an asteroid will be able the miracle upset the sinister plot of tobacco.

The Assembly was assigned to nineteen thirty. It was already nineteen fifteen and center start gradually filled. This room in the artificial cave, strewn electronics, was the ideal place for meetings. As and accelerators and detectors, he too is positioned in the dungeon, but from the working premises it has separated the wall 2 thickness.

The center of the launch it was completely safe and totally secret place - at least, so thought the members of the Brotherhood of scientific research for the benefit of mankind, know not knowing that the hall is the hidden camera. Them and the terrible dream could not absolutely immoral that the enemies of science acquisitive caught each their word, each movement.

In the middle of the room stood the space, a few tarnished after the trauma of interviews with Grid. The screen it is unclear and naklonèn under strange at an angle and the rear were also razlohmachennye wires. In the room a voshèl uchèny intentions and inspect the space,

"Tilting the head in the form of the severely cost with a small silver supercomputer.

- This Bellis? - Asked televangelist, looking to the screen.

- No, - replied Lynn. - Bellis eschè not reappear. - The entire soul had hoped that the other room Collider Eric together with George now render harmless quantum mechanical bomb.

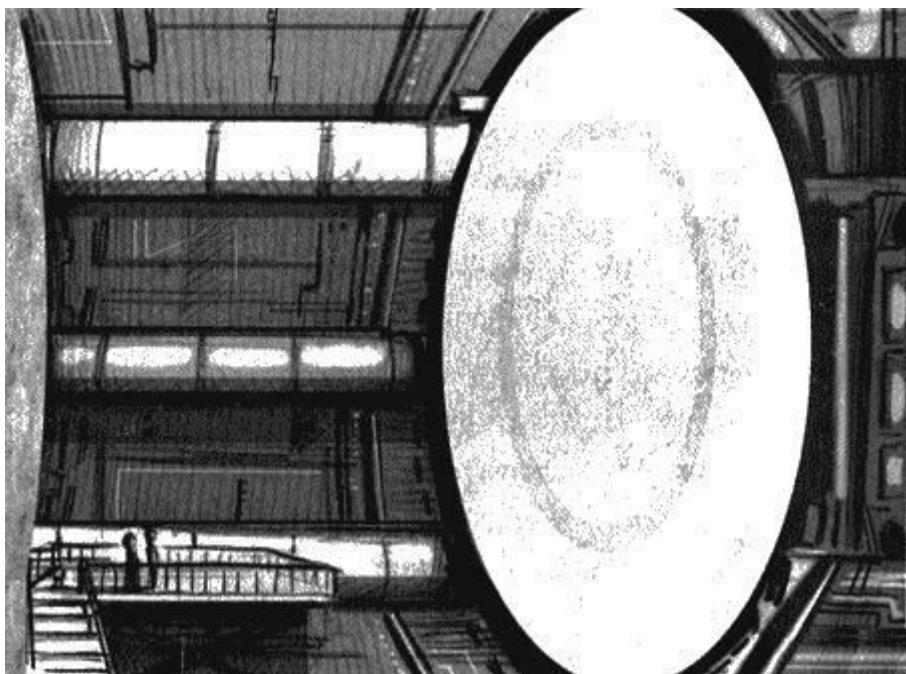
- To the seven forty it is obliged to be there! - The elders stated that the other leader of tobacco. - In the midst of the explosion!

Lynn felt minutes, without fear of breathing. Alas, in exactly nineteen thirty-the mat and in the center of the start of therapy step voshèl Eric. Walk helped him to meet with the thoughts, gave forces and confidence, and he strongly shèl toward the fate, ready to prove and protected.

On the other side of the wall George and Annie only that shlèpnulis on the metal floor: trudge emerge from the back of the Trap Shrèdingera, they inadvertently faced in the portal.

- Slessssmenya! - Hissed Annie where the from under the George.

He had managed to roll over on side and tried to stand, but the knees St. Paphnutius astuteness did not leave any chance. George lay slightly on the floor, air was as bright as my mind. on a huge metal disc which carpenters directly before them, recalling the poppet: in the middle of a large range of drawn by the range of smaller ones. Drive framed ring from the blue metal plates and the side, if hands to embrace, drag vperèd huge gray tube. This is the construction of the elegant lettering on children, exactly the majestic temple, suppressing already among their size. When the form it as soon as I go to the shèpot.



George some of the rose to his feet. It was that they were with Annie landed at some platform. Annie continues to rest with the iron floor, a description of a ceremony of burying Emperor.

- You How? - Asked èè George.

Annie turned to it with closed eyes, the MIG in the nearest future their - George had seen the bright blues giving it - and again closed her eyes.

- Nothing, - she said. - The feeling, you know, as though the pile and suddenly the included light. I now the Spilt Blood.

George was alone on the parties.

- The USA? - Iowa he not too loud.

The sound dissolved in the space, as though the giant machine swallowed it. To George theatricality only strange chesty cough echo - The ISPS and ISP and ISP ... around seems to be was not a soul.

George had not noticed the tiny motion detector that immediately registered the emergence of uninvited guests and have resulted in the hazard warning lights: Camera Security System has already handed them with Annie image on the monitors throughout the gigantic complex collider. The thick walls, Anne Frank's diary is among the formidable technology, George and Annie not heard whining noise of horns, not constructed on the locking system OBD and caused a reset of the beam: proton beams instantly were thrown from the pipes of the accelerator and sank into the seven-meter graphite cylinders, each of which was pomeschén in steel cylinder. The notion of children did not have that their presence had been impressed at the Collider so much noise.

Annie staggered embarked on the legs and fast-fast blinking.

- We are on the outer boat? - Was behind it, I told you. Is the engine office?

- Unlikely to - shook his head George. - Here the normal gravitation and breathe we without the cylinders. I think that we are on the ground. At the Large Hadron Collider. The old space brought us to where we.

- UV-s, lucky, - said Annie and unobtrusively moved to it - it is always so did, when it was scary. - And where are we now? Where to look for the Pope? And as we obezvre ...

George opened it mouth to answer the èè questions, but Annie, osèkshis to, dense squealed.

- What is it? - George 3.8 as it came and looked around on parties, but not observed any danger.

- I have - on the Leg - The - hairy! - Hardly hear was behind light from the horror Annie.

George looked down. The Annina ankle ceased Côte, the same which eateth on the sofa in the room-trap. George raised his hands.

- Nothing wrong, he said, comforting whether the Annie, whether kota, rather both. - It is simply zuzubinsky kotypa. Leaked for us in the portal.

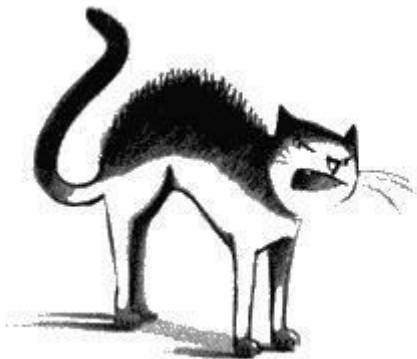
It was too late for the Cat ear, the purring and convenient was caught the hands.

- Are you sure that this is safe? - With alarm asked Annie. - And suddenly this Zuzubin has become in Kota to Thaicom linked for us?

- Is unlikely, - said George, the blossom soft chèrno-white shèrstku. - To see what it now gentle? Glorx not less than the US would like to break from the gigantic rooms ... ND, Ignatovich! - Under the Chin The Cat hangs the medal with the engraved. - That there written?

Annie took the medal in hand:

- "The award to those who naydèt alive or mèrtvym". - It turned the medal and read on the back of: - "Shrèdi". Probably, the name. Wait-ka, there eschè that-that is, small letters: "I Côte, which are forgotten in itself".



Côte suddenly hissed and excited countenance claws in pin George. The she gasped and opened his hands.

Is God? - Gloomy said Annie. - Nothing that out of the damned rooms, can not be trusted.

Côte gently landed on all four sweeps, hissed again, as if the invisible enemy, arched its back so that the wool into could not discern the intentions and vehemently scratch claws iron floor. The MIG raised eyes to George - moustache indignantly there - and again ashes. George dropped before them at the squat.

- That with you, Shrèdi? What happened?

- Pretending, snorted Annie. - Regular ploy.

Shrèdi made a few steps vperèd, returned to several times oboshèl around the George, again the Egyptians vperèd and again returned, vsè time defying the George ambitious views.

- It seems that he said: "follow me", - guessed George.

Annie eyebrows went up:

- You are going to follow the palace stylings ?!

- I am, incidentally, once blessed in space speaking everything boils down, - recalled George. - And then crazy uchèny who wants to blow up the LHC, shoved us in the Albergo Accademia room. So why should I not follow the palace stylings? The more so, Côte Zuzubina.

- I thought, This Côte Shrèdingera, screwed Annie.

- No matter! It is important that this Côte physics - means that it can the know. For example, it could see in the window as Zuzubin behind a bomb at the Collider. - And by the way, - George cast a glance giant silent mechanism, - if for that matter, we have no other ideas, no prompts, where> The bomb! And where> thy Papa, we did not have.

Annie was on your mobile phone. It is not he signs of life.

- If this is the Large Hadron Colider (LHC - continued to George - as well as to it, because it can not be, he means, we under zemlèy And this does not mean, -. He stated on the machine - Probably, the detector . in the nèm tubes in which the face of the protons.

- We are under the zemlèy, repeated Annie. - In the dungeon. As partisan.

-, Burrowing deeper into the - said George. - From one trap to another, only this a thousand times more dangerous. But we have the same Not in vain here. Space delivered us not where to get and in the same place at the Collider, where Zuzubin visited before. Means the bomb, here!

Shrèdi hissed again and "Tell Kanga impatiently sweep on the floor. In the favorite dog's puppies quiet children suddenly simultaneously crowd pressed them together that they hear fireplaces hour mechanism of bombs. The last minute before the explosion which prervèt not only the greatest experiment in the history of mankind, but many lives ...

- Okay, - ferrara Annie - for the palace stylings so the palace stylings! Vperèd, Shrèdi, dribble us!

Shrèdi squared moustache, bestowed upon Annie and George complacent he changed and greenery that surround the speaking, the Egyptians to the edge of the platform. With neè Cool Down has blue metal ladder. Before the top step of Côte shattering and Turkish diplomats should show united looked at the George.

- Wants to you the hands took, translated Annie.

- Only without these prophecies were fulfilled, Shrèdi, warned George and ideology Kota on hands, the Egyptians down. Annie stamped breadcrumb trail. The Railways of the step couldn't rumbled.



As the only ladder out of, all Shrèdi jumped with palm rest, elegantly landed and ran vperèd along the curved Boca detector Atlas. The children of the nobody went to him.

- Listen, Annie rates George for the sleeve - and if Shrèdi us not to bomb vedèt? What then?

The George in the stomach vsè was too strong.

- Do not know - honestly answered it, taking care that the voice sounded with vigor. - Then, probably, we thy naydèm Pope, and it certainly will be able to defuse the bomb.

But both knew that are deeply under zemlèy, okruzhènnye thick walls of glass, stone and machine equipment. If the bomb vzorvètsya, they will die.

Côte vèl their brutalizing the far end of the huge underground hall along the brilliant Boca detector.

- If the bomb, here, we eè nor for that not naydèm Bernardâ Annie.

George is already was in believe this. But Shrèdi thought differently. He again hissed, produced claws and grabbed Annie in the leg - very significantly, even through the tough jeans trousers.

- Aye! - I screamed it. - Are You In ?!

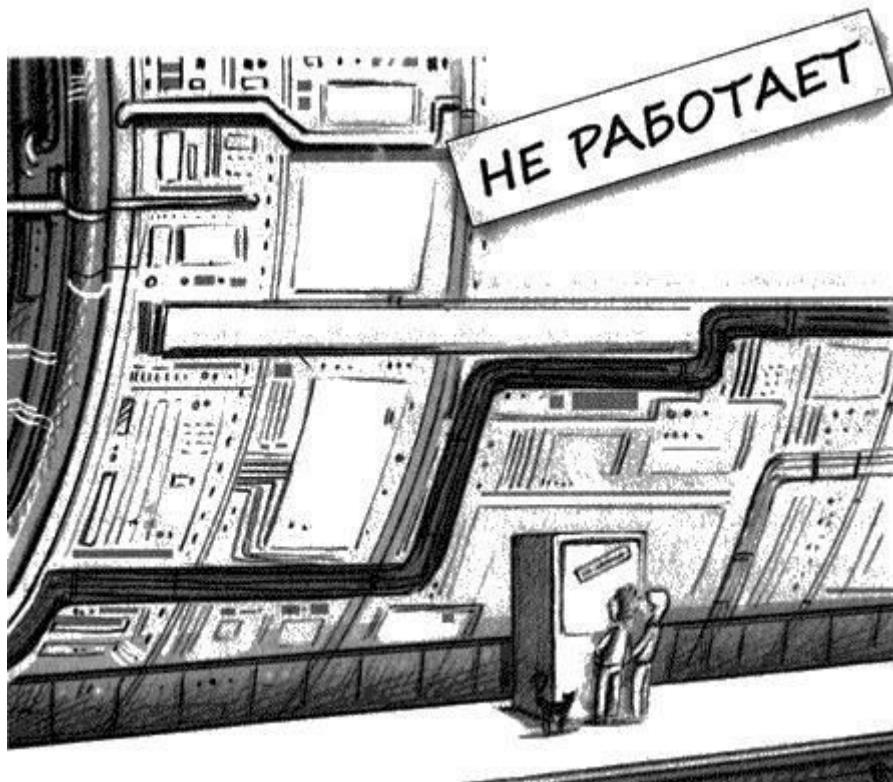
Côte arguing looked both eyes, arched a long tail and went to the vending machine with drinks - the very simple vending machine, which children initially not noticed on the background of the pride that their surroundings.

- Shrèdi! - The father Annie. - We are not going to thee nothing to buy! Now we are not up to this!

But George stopped before the rifle and became closely its someone.

- Annie. Say-ka. You do not desire nothing strange?

Annie peered carefully. The upper part of the machine was divided into the slots on each was image banks with a drink and the corresponding button. And on top of all this, realign it, - hand-written label "does not work".



- All drinks unfamiliar, - said Annie, look to the George. - Such does not happen! It eschè for "Quark kvass"? And the "sip \$"? "Neutrino nectar"? And all the lights are lit, although it is written, that does not work.

- The Eight - gloomy said George. - A total of eight drinks. And Lynn said that the bomb eight buttons. Annie gasped.

- So the bomb here? In the vending machine? You only need to select the correct drink - and we eè I / O?

George dump of the pockets strip of paper with a long sequence of digits - the most that so kindly counteth me unto him from the Russian wrestlers won right Olympics licenses.

Is! This Code, which activates the switches, and only then can be done so that the bomb exploded. Or conversely, did not explode. And there this ... quantum electric polarization: involved all switches, but only one of them is important to us. A - we do not know.

- And if we do not nazhmèm the - button bomb vzorvètsya? - Clarified Annie.

- Yes. And the idea that there vsè so arranged: you do not learn which button you need, not yet try, nachnèsh try - is not the same ... But Lynn said that he had some of that invented to this damned bomb vsè you to disable the. He said that the provèl monitoring and received the result.

- Once he provèl monitoring, quickly realized Annie, - means, I would like to know what drink you choose to this electric polarization does not superpozirovala. And probably found! He knows which button to defuse the bomb. And the code for the activation you already have.

- Left to select the correct drink, - summed up the George, - only and the entire.

- The only and the whole ... - Echo commended Annie and reached closer to the gun, looking to the picture.

- Do not touch, predosterèg eè George. - Suddenly there Mina-trap?

- I and it can be written as follows. But the select-it must be ... See! - Under the slit to coins Annie noticed the display on the tool displays how many coins thrown. The display shèl return otschèt-digit numbers: 81, 80, 79 ... - Considers seconds before the explosion! We choose, prichèm quickly. Is vzorvètsya! .. If the press all eight simultaneously? Not help?

- No, - said George. - The same machine for drinks. London Heathrow Airport fine. But in the normal keying you socialize one drink, then you hit only one button. And on the other is not possible. Means and we can press only one.



- But what !?

George, frightened of unrest, was read the names of the drinks:

- "W and Z", "Quark kvass", "sip \$", "The Fountain of photon", "Neutrino nectar", "Energy of the electron", "Hee-Hicks", "Thaon-lemon" ...

"60" is illuminated on the display.

George looked at Shrèdi:

- You have ideas?

Côte notorious shook his head as if speaking "I made vsè that could", the webbing free from George the shoe and firefighters to lick their moustache.

- Annie, you?

- One of them must be "odd", it should the differ from the rest, - she said. - Probably, Lynn specially provèl in nèm quantum monitoring to bomb then chose a single one of the eight codes - that you want to ... But what, what?

- Bozons W and Z - muttered George themselves under the nose. - Quark ... Gluon, Foton, neutrino, electron, bozon Higgs, Thaon ... - and here in the brain like broke the lights as the vending machine with drinks. - The Eureka! - I yelled it. - This is a Bozon Higgs. He excess!

- Are you sure?

Before the explosion remained thirty seconds.

- The Bozon Higgs, unequivocally said George - is the only particle, which does not rotate around its axis. The remaining - rotate: the \$ and photon single spin and the neutrino, electron and Thaon - half ...

- The albums, George! Please, now, until it is too late!

Fifteen seconds. George all lunged to Button, but hand it was filled with a sudden fear.

That if he mistaken?

That if he did not nazhmèt the button and the vzorvètsya Large Hadron Colider (LHC - and all those in nèm is, like?

Here he recollects as Eric once told: in the quantum theory of all monitoring unpredictable (Eric said - "neopredelènnny"). You can calculate only the likelihood or of any other result and only in certain situations this probability becomes opredelènnostyu. As the same sell Lynn Davis has managed to make a bomb to choose "Hee-Hicks"? George was lying on the Boucicaut scrap of paper - and suddenly dying that the last icon on the nèm - Letter. The capital letter "X".

Seconds flying inexorably. Nine, eight, seven, six, five ...

The schète "five" George, libel cases that finally that guessed correctly, pressed the drink "Hee-Hicks".

The lights on the keying in the same MIG are off - only the button "Hee-Hicks" continues to repay. Display the measurement on the digit "4". In the window below next to button appear text: "Enter Code".

George quickly vvèl Busikova numeric part of code causing the machine at the moment a great miracle then took place there:. Light and brigand (who served Chetvèrka the display disappear, instead of neè appeared the inscription: "cleared".

Children potryasènno looked at this inscription. Here the loud Redrick looked up at Ernest's face and the transparent pickled cucumbers appeared sweating bank drink.

- Nothing itself! - The said George.

Shrèdi quite purred. Annie without force has fallen to the floor. Suddenly heard another sound - that opened the door tyazhèlaya, then darkness quick steps that are clearly drawn nearer. Finally from the angle of the huge machine appeared disheveled Eric - and measurement as pointed excitedly, seeing children.

- Annie! - He kept repeating. - George! How quark you here saved?

Behind the Erika seemed a whole series of Macduff decides uchènyh.

When triggered the alarm uchènye immediately realized that the artificial cave, where is the detector Atlas, unclear as trousered of two small growth. Squeezed through the crowd to the monitor, Eric, to advise its, saw that these two strikingly similar to his daughter Annie and eè best friend George. Turning cold, it together with other uchènymi followed as the two figures descended on iron ladder and withdrew from the field

View of the surveillance cameras. In this most mig it another says: "as and Giancarlo Fisichella from the center of the start in the direction of the Detector Atlas.



- The Pope! - Annie rushed to the father. - Are you alive! The LHC is not vzorvètsya! Science does not lose!

- The chèm this you? - Eschè stronger than they answered Eric.

- Professor Bellis, entered in the conversation one uchènyh enlighten us, please: how two children, apparently having to you an attitude, have proved to be in an isolated underground compartment of the Large Hadron Collider and resulted in the locking system causing the reset beam?

- Doctor Jiang ... - but Eric.

- You can, finally, to explain what is going on here? - Under the mouse from the doctor Jiang was a small silver space. Despite the alarming and overall sharp hit, Jiang is not forgotten tack-computer with a - it clearly does not wish to leave it unattended.

- Frankly speaking, no - admitted Eric.



Doctor Jiang long silence, but George strongly travels vperèd.

- Hello, - loud he said, referring to all. - Sorry, please. Vsè case that the vending machine for drinks was a quantum-mechanical bomb.

- In the vending machine for drinks? - Dreamed Jiang. - But it is already one hundred years as broken. No one they do not enjoy ... Is ... So here it as ... lay here in broken automatic ... clever, nothing is not true.

- And if the bomb exploded, - continued to George - from the Collider left to wet place. We - in the sense that we with Annie because the one I would not discharged, - we know that there are eight switches, using which you can cause a bomb in the action or, conversely, neutralizing eè. A vending machine - eight different drinks and eight buttons, means that each button is pressed. We had the code - George waved Busikovoy tube - and we know that the inventor of the explosive device secret from all provèl monitoring and received information on which of the buttons will be able to turn off the bomb. So that we had only to calculate the correct switch, there is a drink. And we decided that this is probably the "Hee-Hicks", there is a Bozon Higgs, because all the other particles rotate around its axis, a Bozon Higgs does not rotate. But, in truth, - he was lying on the Annie, - we understood that our choice is correct, because in the end of the code is written the letter "X". So that we have chosen the bozon Higgs, entered the code - and now the bomb defused.

- Yes, - extended one of uchènyh - that is now on the Collider accurately detected bozon Higgs. Prichèm in vending machine with drinks.

The remaining uchènye pereshèptyvalis:

- Quantum-mechanical bomb ... what hideous device ... who only in the head come ...

- But as it is to happen? - With alarm asked doctor Jiang. - Who the intended to destroy the LHC, destroy uchènyh, destroy science ... Who? Why? Why?

George and Annie exchanged glances. Annie breakfast! ' and reached vperèd.

- This vsè tobacco, - open-hearth furnace explain it, - the secret enemies collider. - The Moscow Times - by Maria Antonova Uchèneye eyes and groaned, but Annie continued: - they decided to blow up the LHC now, when all of you gathered here. To all the thought that your experiments fatally dangerous and has never tried to repeat. Like a single wipe to destroy the best physicists of the world and to intimidate the mankind.

- I am one does not understand, - said doctor Jiang, - as it succeeded? We at the Collider highest classification level. As they jumped here?

- One of them - member of the Brotherhood, - simply explained George.

- This Zuzubin, irreparable damage said Eric. - He is the US has betrayed. But why, George? Do you know?

View of the Erika was such a painful that George does not like to upset his eschè stronger. But the question was asked, and he had to respond to.

- The shorter, we believe we have to Annie - that Zuzubin like to make from the old large space-time machine and return to the past. And adjust the vsè so that now, from the present, it seemed as if his long forgotten, mossy theory with the beginning were correct. And your - is incorrect. And that he would have eschè then predicted that the Large Hadron Colider (LHC vzorvètsya).

Eric withdrew the glasses and firefighters wipe their vybivsheysya from trouser press the hollow shirts.

- Oh, misfortune, - he muttered. - Poor Zuzubin, poor man ...

- What is the meaning of "poor"? - Considerable ridicule George. - It all of us to blow up the met and its you smile ?!

- Because it soshèl crazy, this same is obvious. - Eric sokrushènno shook his head. - The Zuzubin, which I studied, never would such is not made. It knew that the science does not stop. In science it is important not to those who have the rights of those who have the wrong and development progress. We otdaèm work all their forces, knowledge and ability to uchènym that will come after us, was the build. Of course, our theory may be wrong, but we are aware of it and consciously idèm at risk. To do that the new - means the risk. The one who is afraid of venture, never does not create nothing of the present item. Of course, we are in the midst of errors - as well as otherwise? The whole essence. We try, Costa Rica, begin first, happening, ascend and again idèm vperèd - and vsè this not only in science and in life.

- Yes, this is - the agreed doctor Jiang. - The most difficult and interesting begins not when the our projections are confirmed and vice versa, when they are wrong and we get completely unexpected information. Then to change completely the submission of that, as it seemed to us that we knew exactly.

At that time the doctor Jiang squeaked pager, and trace zachirikali and pagers remaining uchènyh - like in the dungeon flew way Skvortsov. All instantly read the message and the room resounded with jubilant shouting.



- What is it? - Asked George the Erika.

Eric firmly hugged him and Annie.

- Atlas! - He said. - Received the result! And at the moment when we do this is less than the expected. There is new information on the beginning of the Universe. Now, if I am eè in space, ... - Eric suddenly osèksya.

Around was quiet. All remember that the question of whether to leave space to Eric and was not reshèn.

Doctor Jiang too gentle silent. Finally he very politely asked the Erik:

- Dear Professor Bellis! I believe that we have a question that needs to be clarified, before we proceed to the study of these exciting new data. Brothers to decide whether the Hampton Inn you only the guardian and the guardian of space. But before that the matter should be put to the vote, I want to ask you: As out that these children so many know? How they have received knowledge from the area of quantum physics sufficient to prevent the terrible catastrophe - the catastrophe which just not thrown the development of science for several centuries ago?

Eric met responsible, but George his bonuses:

- Can I say? We so much know that Eric us vsè explains. But it is not simply about - he berèt us with a journey that we learn themselves on the svoèm experience. It not simply tells us the information - It makes software development and use of this information.

- Using space? - Asked the doctor Jiang.

- Yes, because with the fun and exciting, - replied George. - We are learning how to get the knowledge and then apply them in practice, when faced with new and unfamiliar tasks. But I am not only this I would like to say. - George timidly was lying on the Erika and vsè same continued: - nothing we had not reached - we do not have saved nor the LHC nor the people, - if not the doctor Lynn. Once in the tobacco, he risked their lives: represent, if they would have learned that it issued? He sent to the Universe your avatar to warn me of the bomb. If not it, we would not have been able to do so. In short, I am the chèm wish to ask: please, take it back to the brotherhood! In my opinion, he has earned.

- GM-M, extended doctor Jiang. - Very curious. Perhaps, I shall put the questions to the vote. Those who have the space remained in the custody of the Erika Bellis, I raise the hands.

Rising forest palm rest.

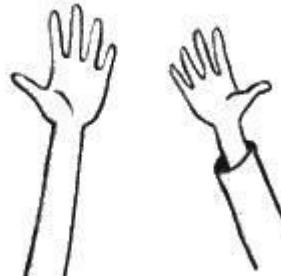
- Who is against?

No one hand has not risen.

- Who for the again to take Zacharie via her the Brotherhood uchènyh?

Although even Eric voted "for", two votes vsè same are lacking.

- George and Annie, - Fun said Eric, - if I did not change the memory you the members of the Brotherhood. Do not want to vote?



Annie with George smiled and raised hands.

- In this case, - said doctor Jiang, proton Erik Space - I would like to once again cast space your concerns. And we have until Seek out via her doctor and let the return of the Brotherhood will be to him a reward for that He saved science from death ...

- Thank you, - said Eric, in the rush to praise firmly receiveth not me space. - Thank You, doctor Jiang. Thank you, colleagues. But the great thank you - you, Annie and George.

- And the eschè one, - said Jiang on the path to the lifts. - Please, Professor Bellis, no more pigs. Very you ask. At least - not with the participation of the supercomputer.

- Of course, of course - rushed to accept Eric. - The next time I his boat of our happiness on machine ... When Naidu, - shèpotom he added, thinking that this will be the first paragraph in its list of cases as the only will be checked the results of the Experiment in 1993-95 the beginning of the Universe.

- By the way of the Fauna, - said doctor Jiang, standing together with Eric and children in the queue to the elevator - I was seeing things or I really saw here Kota? The eyes of their do not believe. As the animal can sneak here?

- Is Shrèdi! - Exclaimed Annie. - Understand, it ... - it has been to explain, but time stopped and recapture his mood on the parties. Shrèdi nowhere was not seen. - Probably, it went

b Another measurement, again it. - If the M-theory is correct and that their dozen, these measurements, choose any.

- Who is a Shrèdi? - Asked the doctor Jiang.

- This is the imaginary friend Annie, - quickly said George. - You know, doctor Jiang, Babies love invent itself friends ... eye! What pushes, Annie?

M-theory: 11 measurements!

The head of the nineteenth

The returning of the dungeon in the center of the management of the Large Hadron Collider, Uchénnye immediately rushed to their computers to read the stunning results received at the detector. Eric and doctor Jiang diligently entered these results in space.



- Simply breathtaking! - Confessed Eric George and Annie. - Understand, with these data space will show us the way of development of the Universe reversed, from today and to what happened thirteen entire seven tenths of a billion years ago.

- LAR, Annie timidly rates for his arm - and you can first call the mum, say that you vsè well? It is the same with the crazy comes off.

- Nd, of course! - Eric Lukashenko articulate his position themselves on the forehead and all lunged for one of the phones bottles on the desktop. - Susan, hello .. Yes, yes, vsè well .. That .. Annie gone!!?? Yes not gone it, it here, with me! .. As it has been in Switzerland? This is a long history. Then explain ... Is No-no, George here too! .. Yes, discover the holiday ... No, I have not forgotten that promised to bring the cake ...

Until Eric painfully settles reply to the question as to how the children into the Large Hadron Colider (LHC, George touched the doctor Jiang for shoulder:

- Doctor Jiang, as well as tobacco? That with them will now?

Uchénnye long silence.

- Already declared the International Tracing, - he said. - I very much hope that they will find and arrested. Their actions threatened the lives of many people, and if not you with Annie ...

- As well as their race?

- Wherever they may be - their track down, I am.

- Is that they do not wish to save mankind, so? - Clarified the George. - They simply all intimidated people to engage in their organization?

- The George, - replied Jiang. - They lied and moreover, concealing their own selfish motives alleged concern for mankind. This evil.

- My parents are not very high opinion of science, - confessed George. - They believe that it causes harm to the planet. Themselves, they tried to live and to protect the planet and not harmful to it.

- Then they are those to whom we, uchènye, must listen, - serèzno said Jiang, and George felt proud of the Pope and the mother. - Their view that in no case should it be reset with the accounts. The Earth is our common planet and protect eè we can only together.

Annie during this time, reproaching the select the pope of the phone and call the Foksbridzh Vincent.

- That the that you have made? - It O wondrous and glorious laughter, time robbing you phone palm and turned out to the George: - Count up, Vincent then he presented his wares Zuzubina back the trap Shrèdingera! Saw that Zuzubin is ochnètsya, opened the door of the portal and the blessed him there!

George grabbed the neè phone.

- Nothing itself! - Voskhischènno he said Vincent. - You brute! - He suddenly surprised to realized that am Vincent and may be - the mod-ox can be, when anything in the future they will become friends.

- Yes, bullshit, with laughter said Vincent. - You - and collectors truly specked. I just thought that this is the most nadèzhnoe the place where you can hold until the Eric not vernètsya. Vaughn, I see Zuzubina On The Monitor - it just went mad! An exhausting one in the room on the square. But the door it does not open, I eè saith.

- It is not splintered?

- I certainly not - the intercession Eric, which heard the conversation. - Nowhere he do something. Will sit locked up as lovely, until we do not vernèmsya tomorrow in Foksbridzh - samolètom as normal people. So it does not worry, I EA. And by the way, George! I find Freddy, promise and a new house for him too naidu.

Annie assumed the George phone.

- Until, Vince! - Fun she said. - Until tomorrow! And now my dad, together with the space perfect for feedback rewinding of the Universe! We vernèmsya in most of the beginning and learn as vsè was when the big explosion!

Eric drummed against the keys supercomputer; doctor Jiang, Their tired eyes were filled with boundless hope over his shoulder, napryazhènno looked to the monitor. To see better, Annie and George squeezed closer to Eric around which has already met a small crowd. The screen space fled down the bars numbers and in the corner of the trailing schedule: Thin red line snaked realign it down.

- This is the diameter of the universe, - said Eric, roll your mouse over the red line. - It seeks to κ Zero as the Space is close to a large explosion.

George saw as the line suddenly rushed down almost vertically.

Is inflation, decrying muttered doctor Jiang, - the period of exponential expansion. Means that we are already at the first-second cycles of life in the Universe.

In the next few minutes silence violated only smooth the humming of computers and air conditioners. George could not tear off the eyes from a thin red line. It is already almost crawled before the end of the screen, but suddenly the MIG standstill and then shifted down, only is not cool. George watched and watched. The line again highlighted - and again crept down. The behind the George izumlènno gasped. George was lying on the Erika - The Elias talking and view its waving his hands and here on the columns of numbers.



- Not that we waited for, as someone whispering Eric. - Is Not ...

- That it is "-? Asked Annie.

Eric has resulted in the cheerful smile:

- This is not that we had expected, Annie. This is a brand new physics! It seems that when a large explosion vsè-I was not ... - he again turned to the outer space treaties and the firefighters quickly print.

Annie looked at the George:

- What was not?

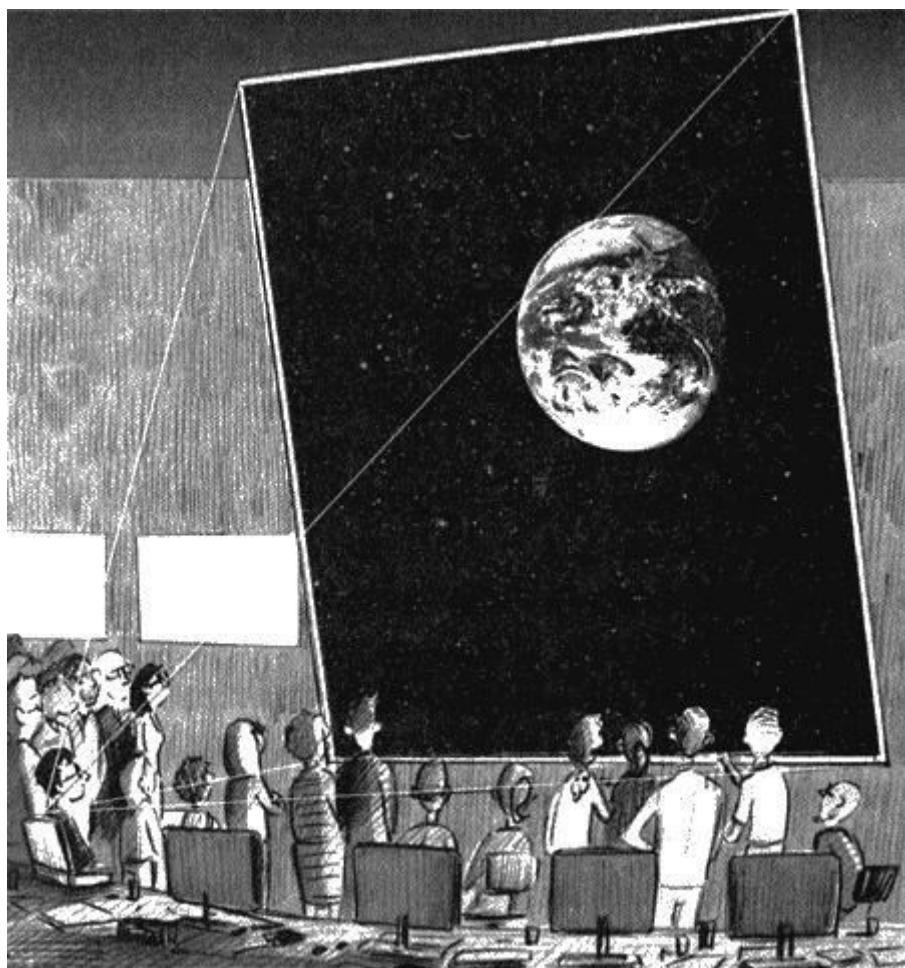
George inescapably embedded followed the schedule. The line continues to be lower, but the trajectory è now become vsè horizontally. It is already almost crawling along the bottom edge of the screen.

- I think I know ... - he said.

Eric with triumphant sat view on the back of the Chair.

- Now see themselves! - He again flaw vperèd and pressed the F4.

From the screen space broke a thin beam of light and painted a window, it knows in the air above the firmament of all those present. Initially in the window it was dark, only in the middle of the crippling overviewed the circular. But then the ball suddenly rapidly obrèl sharpness and proved zelèno-and-blue planet Earth, requesting around its axis on the road around its stars, sun.



The space brought the window to the land can be better see - with all the familiar skyline eè continents and oceans with deserts and forests with the surface of the most beautiful and most inhabited the planets. And the same vsè land surface seemed to evolved form directly from them on the eyes ...

НАШЕ ВРЕМЯ: 13,7 миллиарда лет после Большого взрыва

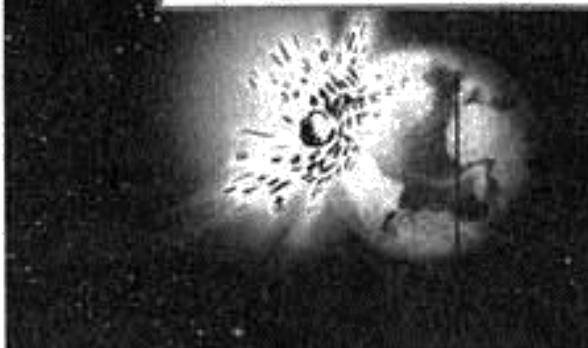


ВРЕМЯ: 200 000 лет назад



Появляются
современные люди.

ВРЕМЯ: 65 миллионов лет назад



Заканчивается эра динозавров.



ВРЕМЯ: 175 миллионов лет назад



Пангея – единий суперконтинент – раскалывается,
образуя все материки Земли.

ВРЕМЯ: около 200 миллионов лет назад

На Земле появляются динозавры.



ВРЕМЯ: приблизительно 2 миллиарда лет назад

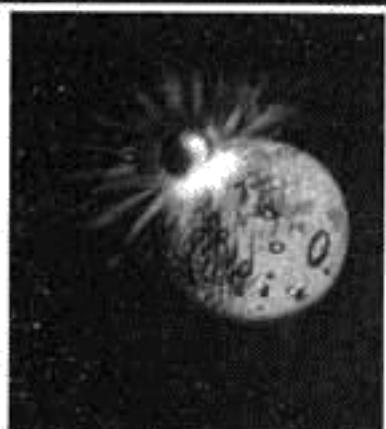
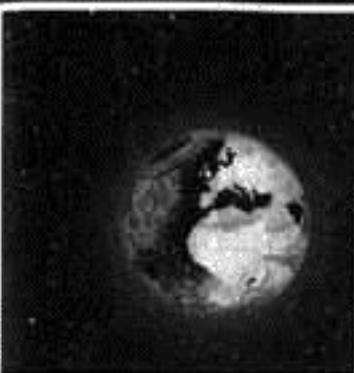
1 миллиард
= 1000 миллионов
= 1 000 000 000

В атмосфере Земли в результате фотосинтеза начинает накапливаться кислород.

ВРЕМЯ: около 3,5 миллиарда лет назад

На Земле зарождается жизнь.



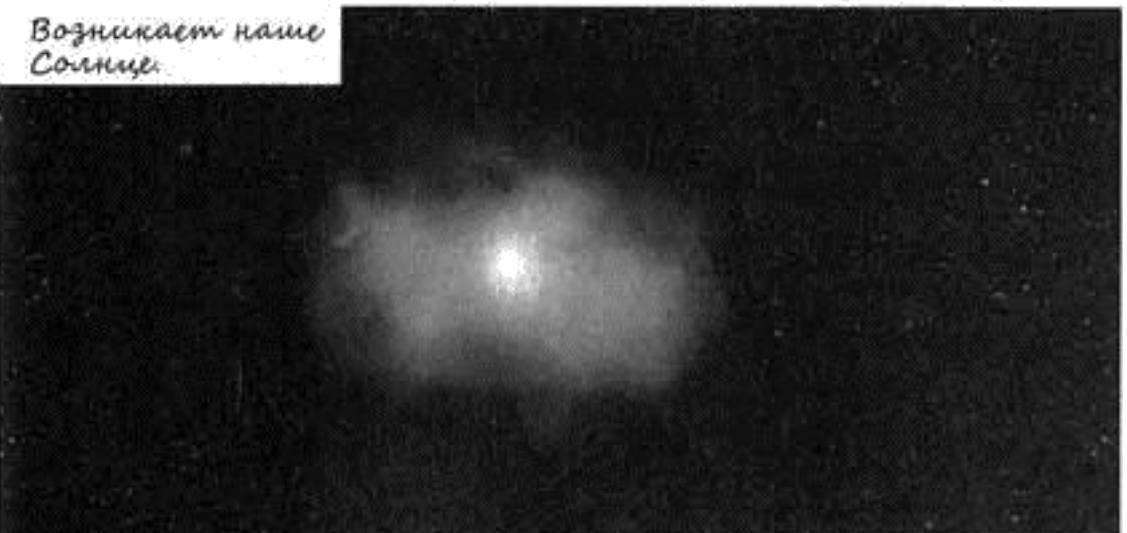


Юная Земля – опасное место...

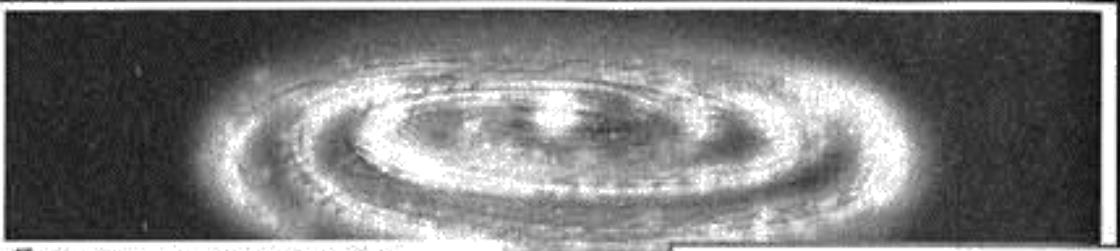


...как и юная Солнечная система, в которой ещё только формируются планеты.

Возникает наше Солнце

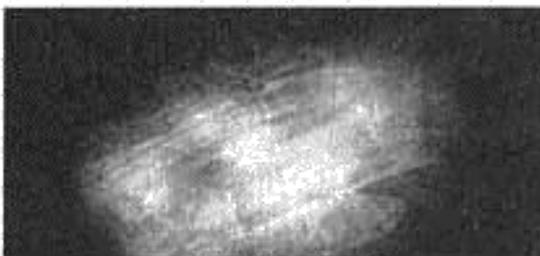


ВРЕМЯ: 4,6 миллиарда лет назад



Прекрасная спиральная галактика – Млечный Путь.

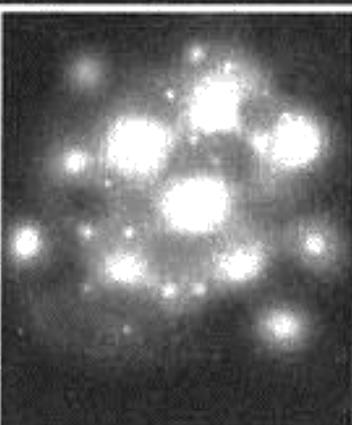
ВРЕМЯ: 13,2 миллиарда лет назад – примерно через 500 миллионов лет после Большого взрыва.



Первые звезды, взрываясь, выбрасывают в пространство смеси разных атомов, благодаря чему во Вселенной возникнет новое поколение звезд.



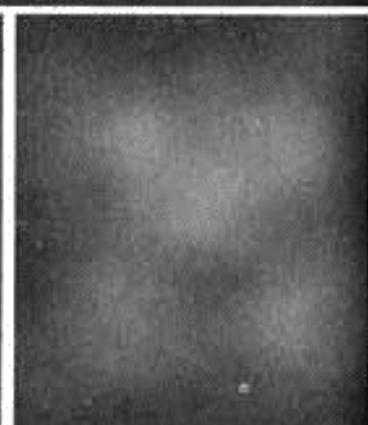
Сгустки газа сжимаются и нагреваются настолько, что начинают излучать ядерную энергию – и становятся первыми звездами.



Под действием гравитации сгустки тёмной материи и газа притягиваются друг к другу.



Космические Тёмное века делятся несколько сотен миллионов лет.



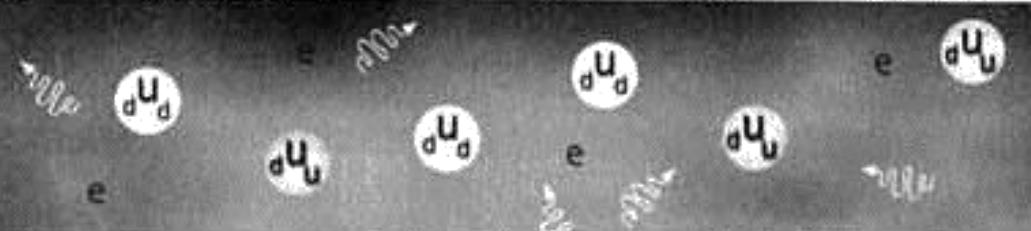
Образуются первые циркульные атомы, туман рассеивается, и по Вселенной беспрепятственно распространяется космическое микроволновое фоновое излучение.

ВРЕМЯ: почти на 500 миллионов лет раньше – спустя 380 000 лет после Большого взрыва

ВРЕМЯ: 13,7 миллиарда лет назад – через 3 минуты после Большого взрыва

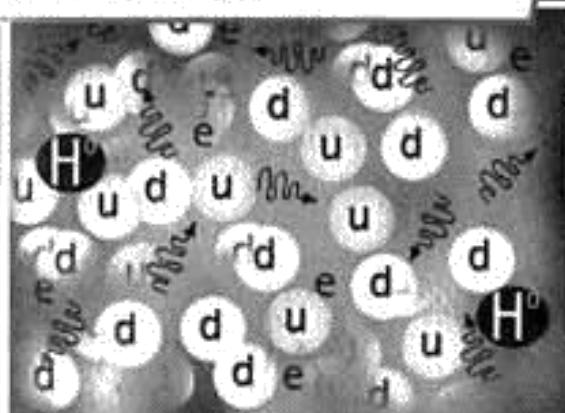
Образуются первые атомные ядра. Вселенную заполняет горячий туман.

ВРЕМЯ: одна микросекунда после Большого взрыва



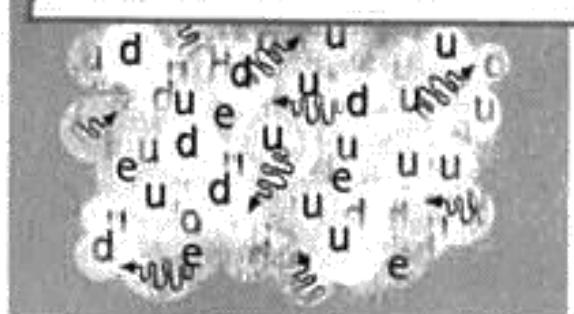
Кварк-глюонная плазма остывает, оттого становится возможным формирование протонов и нейтронов. Материя и antimатерия взаимно уничтожаются, испуская фотоны (частицы света), не способные далеко проникать сквозь туманообразную плазму.

ВРЕМЯ: одна миллионная микросекунды после Большого взрыва



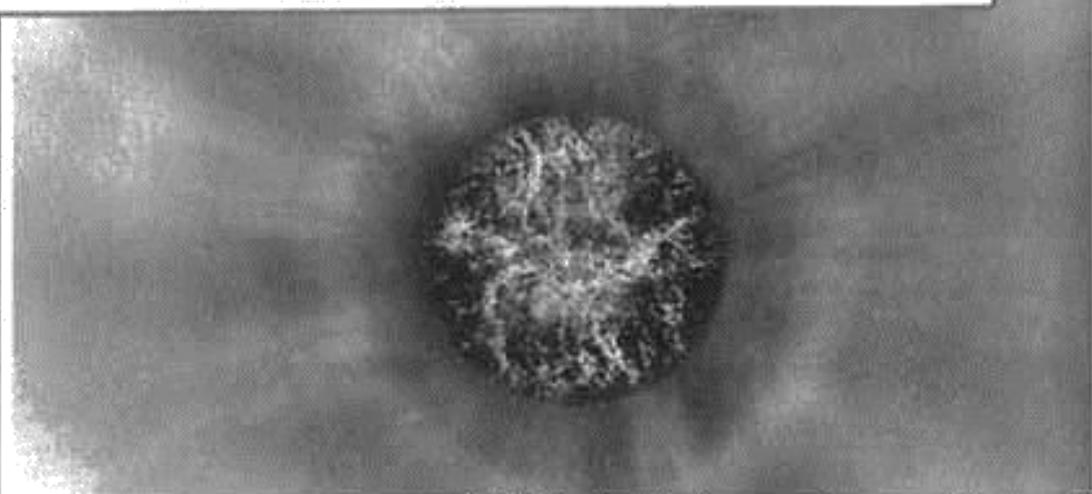
Все частица под воздействием поля Хиггса приобретают массу.

ВРЕМЯ: десять миллиардных миллиардной миллиардной микросекунды после Большого взрыва



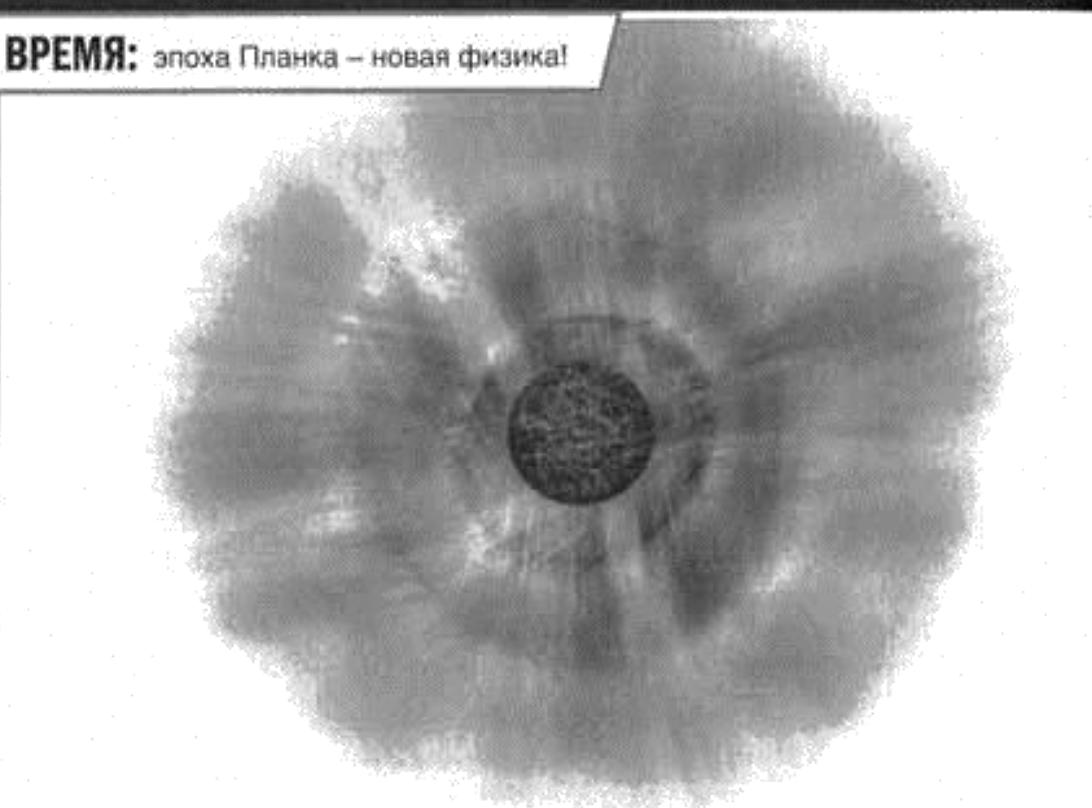
Вселенная только что прекратила расширяться, и высвободилось большое количество энергии. Вселенная заполнена кварк-глюонной плазмой.

ВРЕМЯ: инфляционная эпоха. Почти момент Большого взрыва...

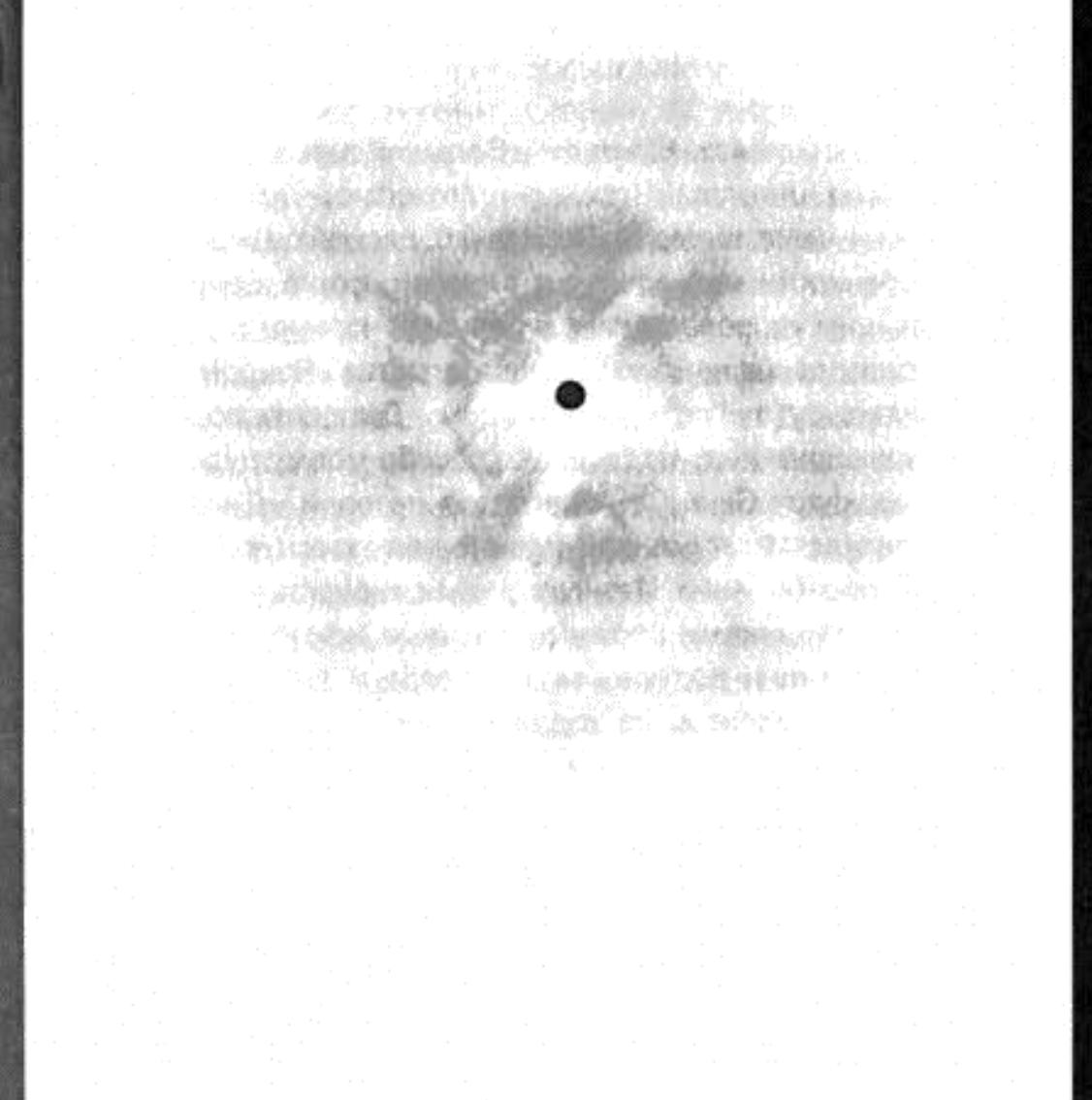


Вселенная очень быстро сжимается, приближаясь к Большому взрыву!

ВРЕМЯ: эпоха Планка – новая физика!



Царство экзотической материи и М-теории.
Еще сжимается, но уже не так быстро.



Именно сейчас должно начаться пространство-время, как мы его понимаем. Но Вселенная, немалоюко маленькая, всё еще существует и все еще сжимается. Может, она никогда и не достигнет сингулярности?..

From the author

Such books as "George and large explosion", does not arise from nowhere. That they have emerged, need the efforts of the very many people. Work on a series of the Jorge, especially over the last book, has become for me and a great pleasure and a great honor.

I am grateful to the team the publishing house "Random house stories books", escorting George in all his adventures. Separate thanks to my exciting editor Sue Cook, which "George" has evolved from a vague ideas in full trilogy. Thank you Annie Eaton for the vision and for the fact that Moldovan èè complex scientific concepts have simple and accessible. Thank you and my other friends and colleagues of the publishing house, which have invested so much of the soul and the labor market in a series of books on Jorge: This Jessica Clark, Sophie Nelson, MeV Behnam, Juliette Clark, Lauren Buckland, bhavini Dzholapara, Margaret Hope, James Fraser, Clare Lansli.

My sincere appreciation to the Clare Paterson, Kirsti Gordon, Sunroof Janklow JUST and Julie from literary agency "Janklow and Misadventures of Universality", through which our George traveling not only on the universe, but also on the planet Earth.

Harry Parsons, as always, lively and delicately feigned George, his friends and enemies and expertly discharged to the enormity of the task - to illustrate the history of the universe to reverse from our days before the beginning of the vremèn.

Without Stuart Rankine peace and has not learned to the feedback trap Shrèdingera. It Tremendous Thank you for this brilliant invention, as well as for the essay on a large explosion, misleading ease of explanation of the quantum theory and the many strange and mysterious phenomena. Low bow Marcus Pessel of the Max Planck Institute for the huge contribution to the final version of the text.

In the regular times - my deep gratitude to the eminent uchènym that volunteered to explain the young readers of the essence of its work. Paul Davies, Michael Térner, TRC Thorne - thank you for your brilliant essays!

Thank Roger Weiss from NASA for the photos wonders of the Universe - and to all our friends from the NASA for permission to take photos.

Thank you to all my friends and colleagues from the University of Arizona, inviting me to teach literature, for the excellent year and for the opportunity to finish this book.

But the great thank you - readers, who have waited for the continuation of the adventure of George! I wish you the space of success!

Lucy

Illustrations



Наша прекрасная Земля и её единственный спутник – Луна.



ИЗ ФОТОАРХИВА • НАШ ДОМ ВО ВСЕЛЕННОЙ



За мгновения до старта космического шаттла в небе над ним проплывает метеор, словно напоминая о величии Вселенной, которую мы стремимся исследовать.



Луна в последней четверти и тонкая полоса атмосферы Земли; снимок сделан с Международной космической станции.



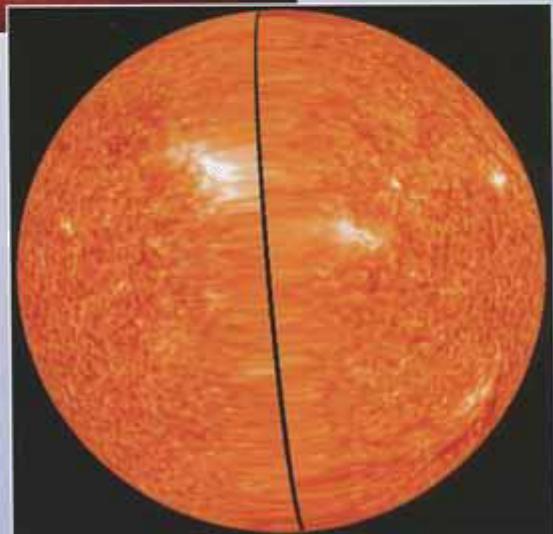
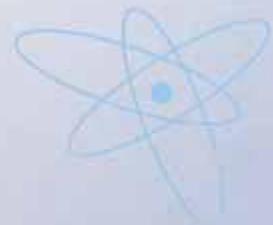
Исследование поверхности Луны с помощью лунного ровера.



Из коллекции ЕКА



Наше Солнце.



Два космических зонда
могут одновременно
передавать
изображения видимой
и обратной сторон
нашего Солнца!
Этот поразительный
комбинированный
снимок был получен в
феврале 2011 года.



ИЗ ФОТОАРХИВА • НАШ ДОМ ВО ВСЕЛЕННОЙ

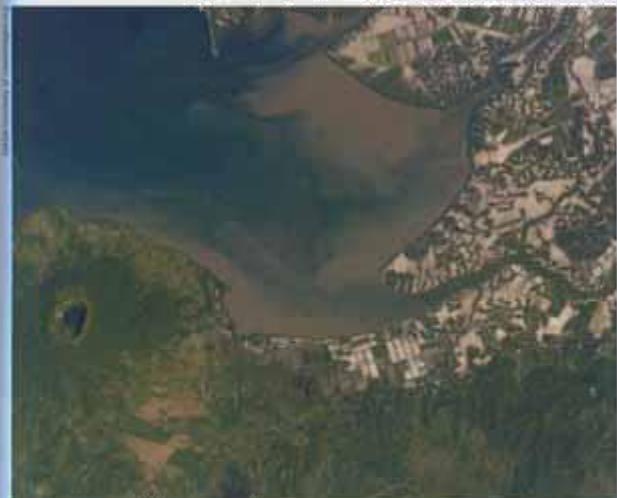


ГЛЯДЯ НА ЗЕМЛЮ ИЗ КОСМОСА



Горы Симен в Эфиопии, Африка.





Вулкан Консигуина
в Никарагуа,
Южная Америка.



Ураган Даниэлла в августе 2010 г.

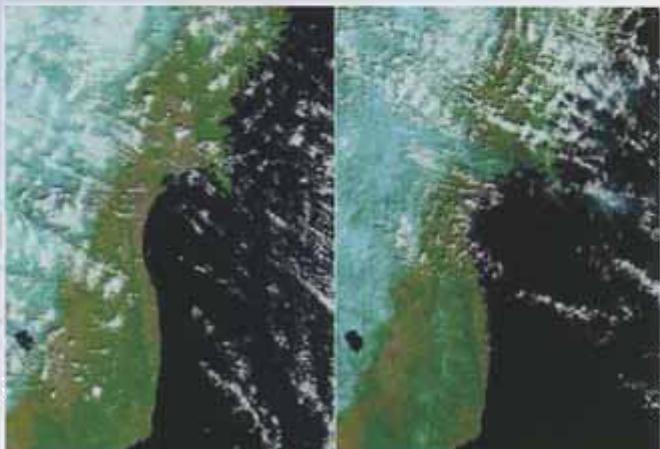


ИЗ ФОТОАРХИВА • НАШ ДОМ ВО ВСЕЛЕННОЙ



Национальный парк и заповедник «Великие песчаные дюны» в штате Колорадо, США.

Ужасающие
последствия
циунами
и землетрясения
в Японии в марте
2011 года.



ИЗ ФОТОАРХИВА · НАШИ ПРЕДСТАВЛЕНИЯ О ЮНОСТИ ВСЕЛЕННОЙ



Исследования глубин космоса телескопом «Хаббл» позволяют предположить, что первые звёзды после Большого взрыва озарили небеса, точно фейерверк.



Скопление молодых звёзд NGC 3603 в созвездии Киль, в 20 000 световых лет от нас.

ИЗ ФОТОАРХИВА • НАШИ ПРЕДСТАВЛЕНИЯ О ЮНОСТИ ВСЕЛЕННОЙ



«Хаббл» позволяет увидеть самые удалённые объекты наблюдаемой Вселенной.

ИЗ ФОТОАРХИВА • НАШИ ПРЕДСТАВЛЕНИЯ О ЮНОСТИ ВСЕЛЕННОЙ



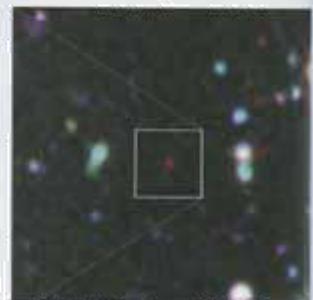


Едва заметное красное пятно – инфракрасное изображение – показывает одну из самых первых галактик, какие мы видим во Вселенной.

Эта компактная галактика – «кирпичик» нынешних гигантских галактик – существовала уже через 480 миллионов лет после Большого взрыва.



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ИЗ ФОТОАРХИВА • НАШИ ПРЕДСТАВЛЕНИЯ О ЮНОСТИ ВСЕБЕННОЙ



С помощью новейших технологий астрономы создали карту тёмной материи (вещества, которое невозможно увидеть) в массивном скоплении галактик Abell 1689.

ИЗ ФОТОАРХИВА. • НАШИ ПРЕДСТАВЛЕНИЯ О ЮНОСТИ ВСЕЛЕННОЙ

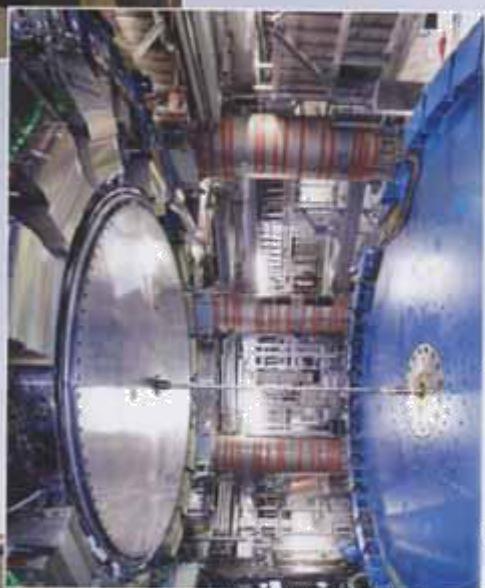


Большой адронный коллайдер (БАК) – международный проект, базирующийся в Европе, позволит заглянуть в начало времён.

ИЗ ФОТОАРХИВА • НАШИ ПРЕДСТАВЛЕНИЯ О ЮНОСТИ ВСЕДЕННОЙ

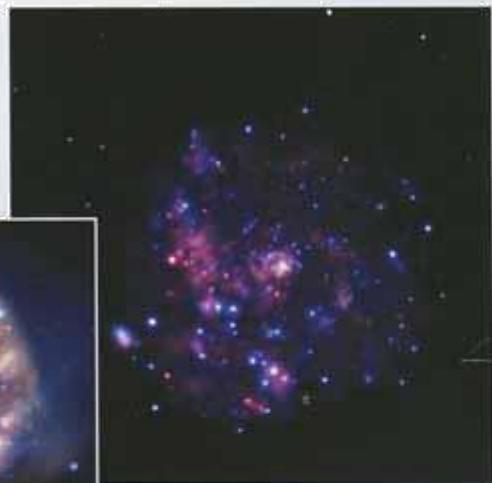


ИЗ ФОТОАРХИВА • НАШИ ПРЕДСТАВЛЕНИЯ О ЮНОСТИ ВСЕЛЕННОЙ



ИЗ ФОТОАРХИВА • ГАЛАКТИКИ

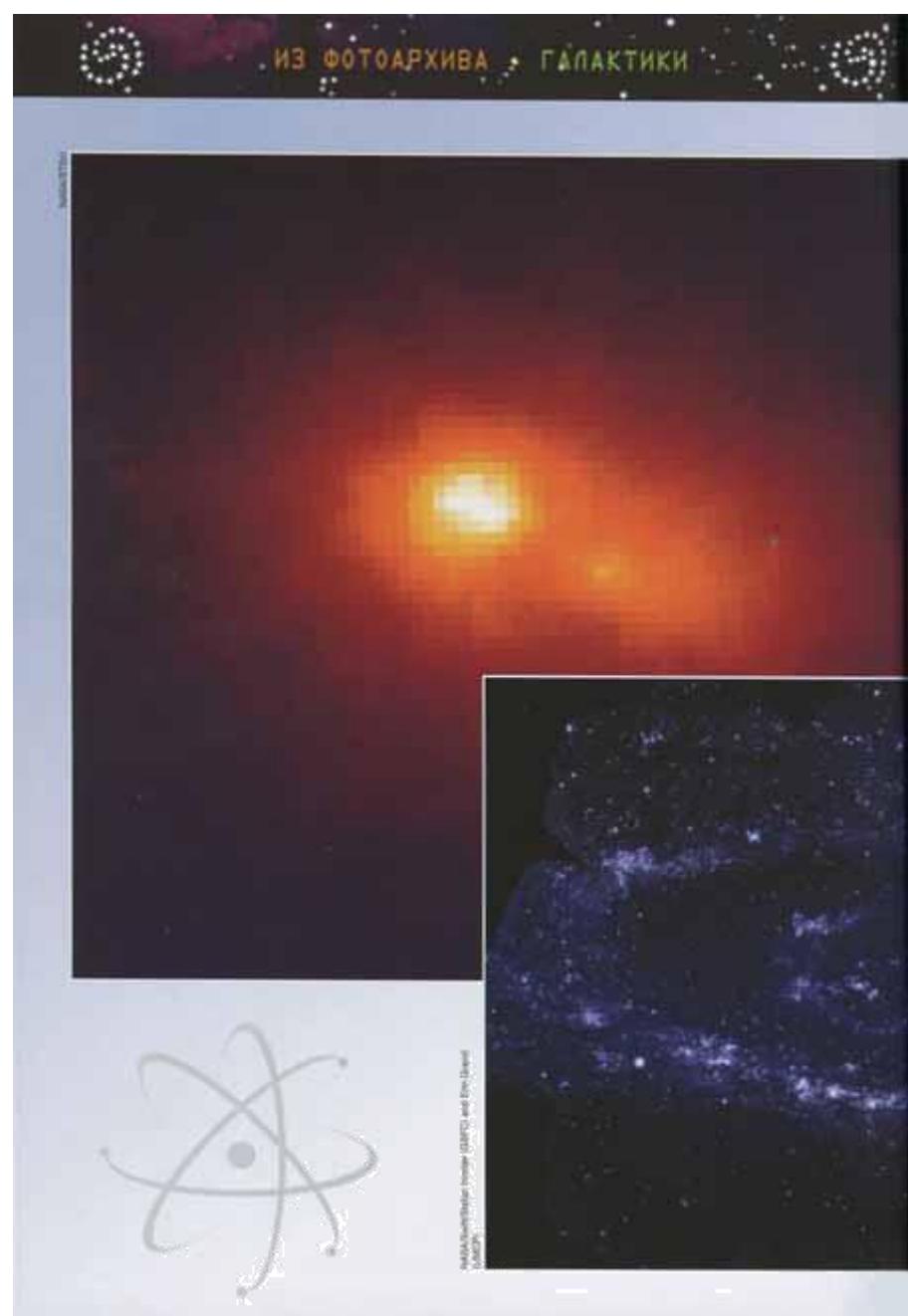
Галактика Вертушка почти вдвое больше нашего Млечного Пути.

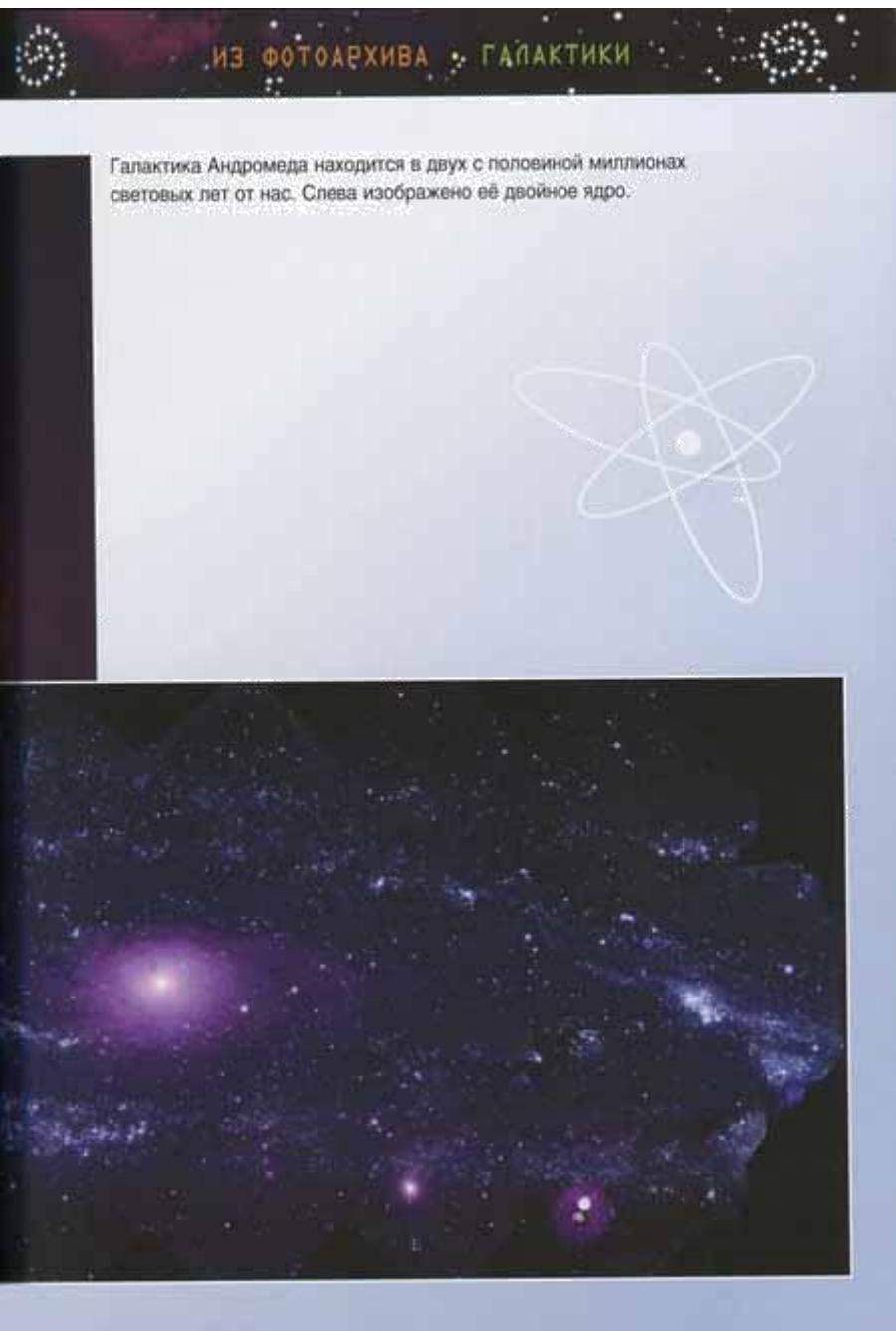


Антенны – пара взаимодействующих галактик в 62 миллионах световых лет от Земли.



Галактика Сомбреро – выпитая шляпа! Астрономы считают, что в самом её центре находится чёрная дыра.

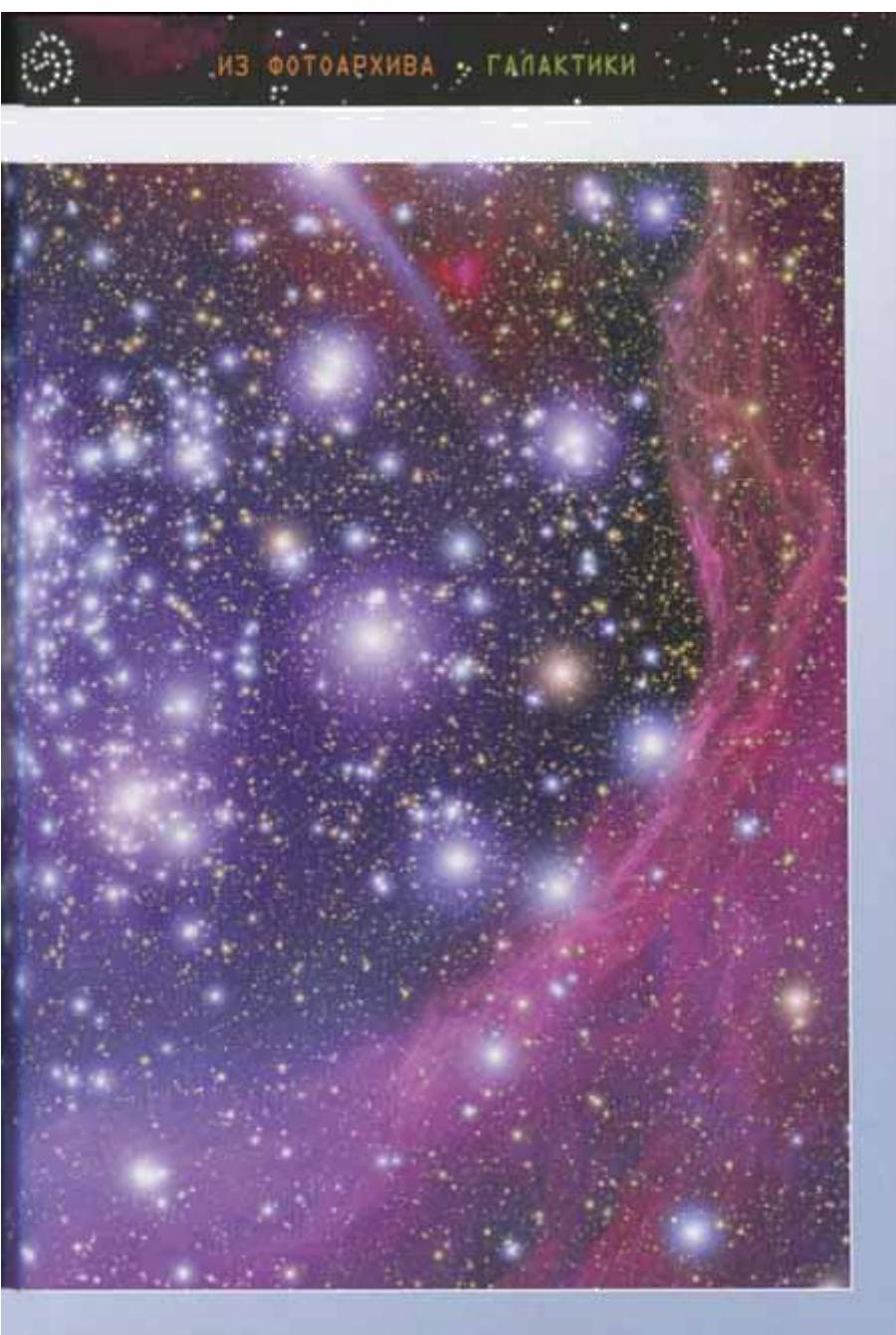


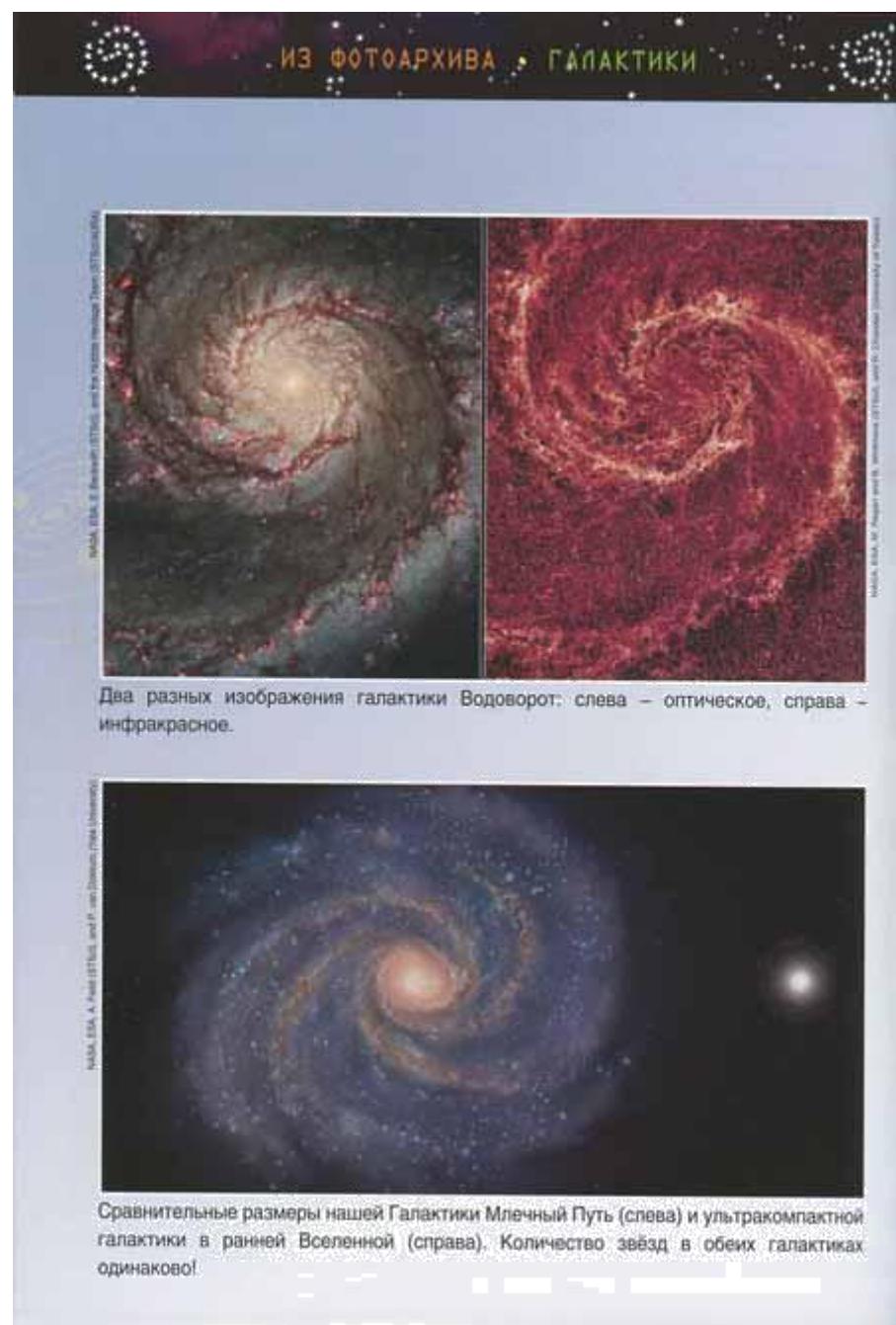


Галактика Андромеда находится в двух с половиной миллионах световых лет от нас. Слева изображено её двойное ядро.



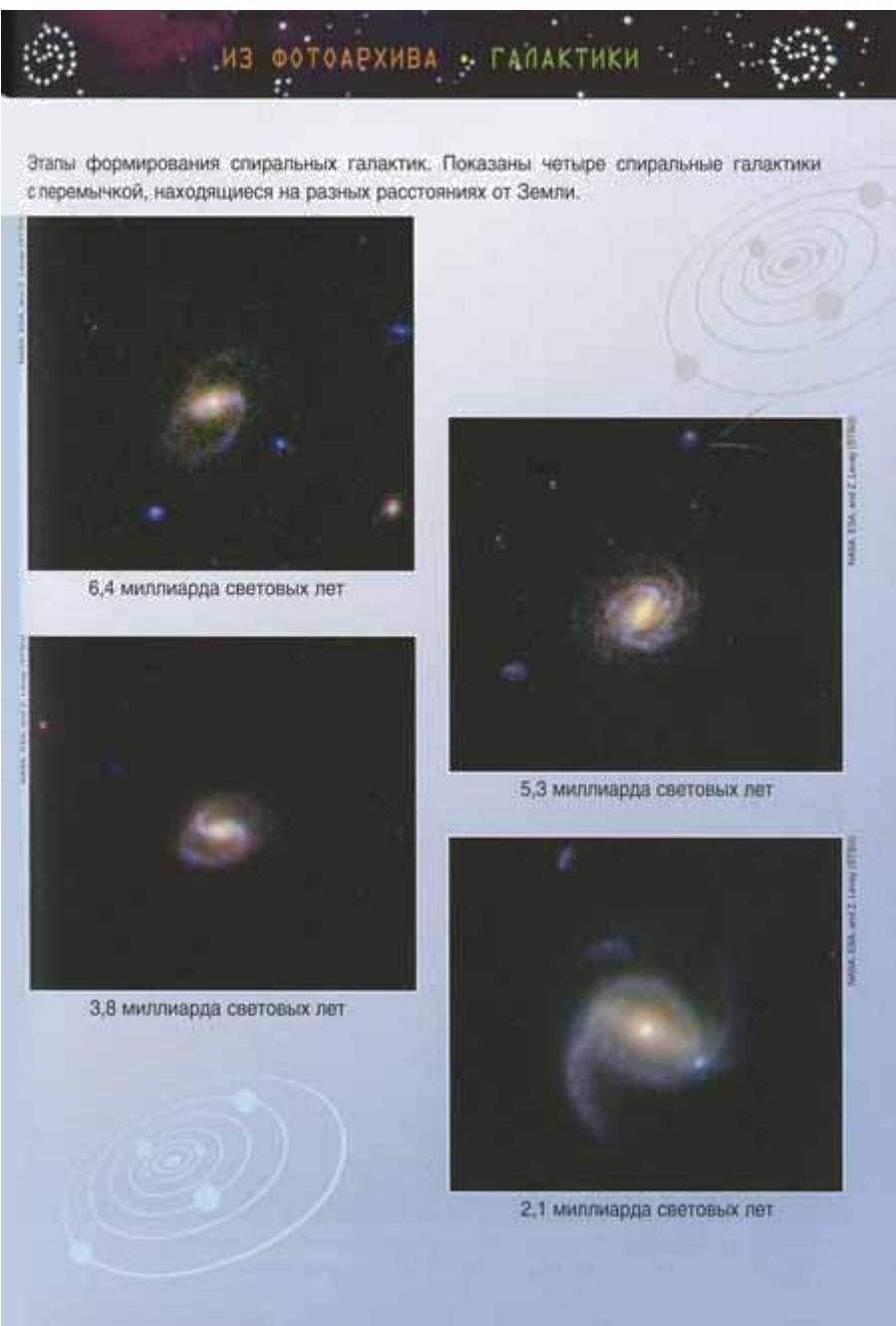
Так художник изобразил Скопление Арки, находящееся в глубине Млечного Пути.





Два разных изображения галактики Водоворот: слева – оптическое; справа – инфракрасное.

Сравнительные размеры нашей Галактики Млечный Путь (слева) и ультракомпактной галактики в ранней Вселенной (справа). Количество звёзд в обеих галактиках одинаково!





Объект Ханни – космическая загадка: единственная видимая часть газового потока длиной в 300 тысяч световых лет, тянущегося вокруг спиральной галактики.



Столб межзвёздного газа и пыли в Туманности Килья. Изображение в видимом свете (у разных газов разные цвета).



Инфракрасное изображение этого же столба (разными цветами обозначены разные длины волн).





ИЗ ФОТОАРХИВА • НАША ОРЕКРАСНАЯ ВСЕЛЕННАЯ



Космические «ледяные скульптуры» в Туманности Кили...



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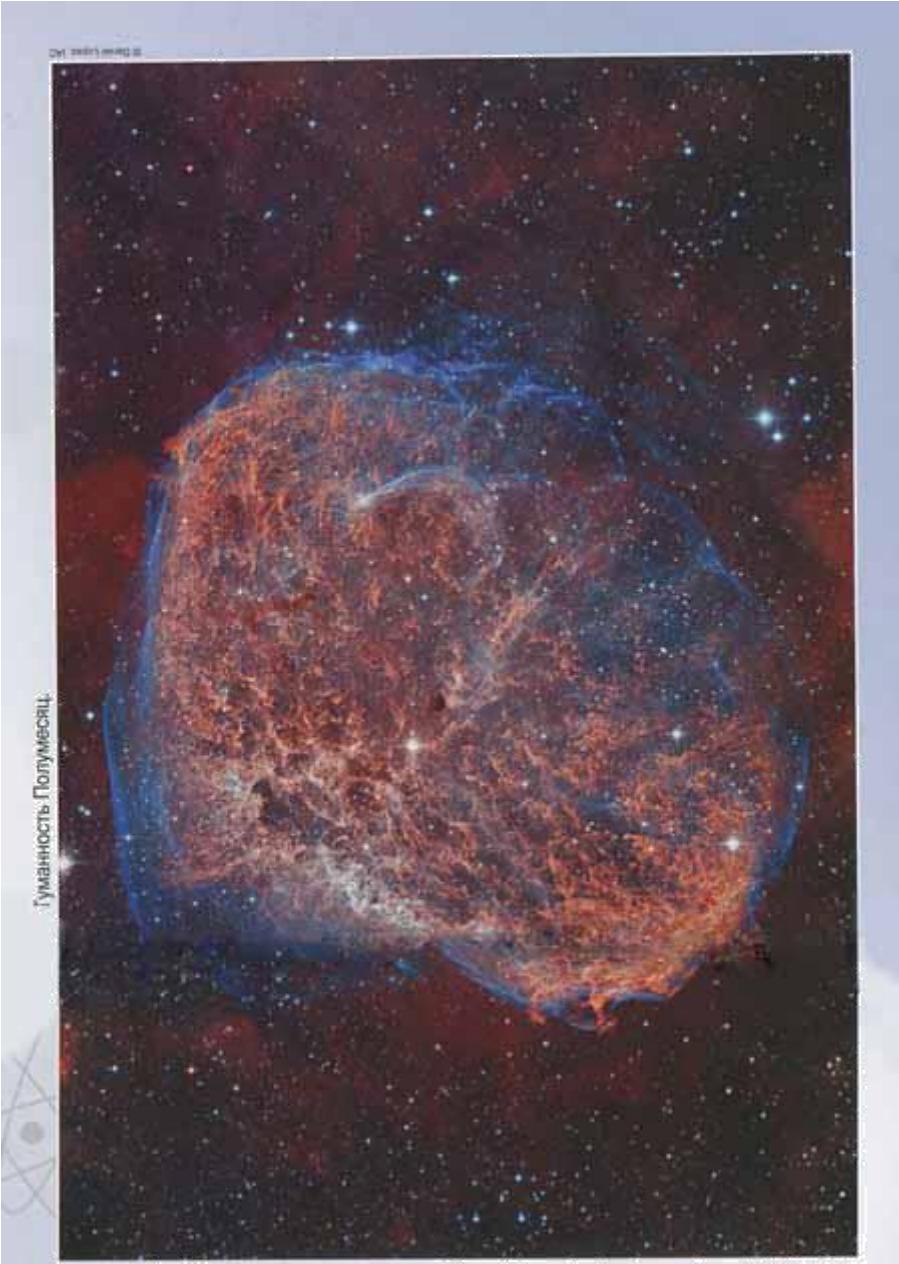




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Туманность Орёл.





Гуманность Полумесяц.



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Кольбели звёзд в созвездии Орион.



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Межзвездное грибовидное облако – газ от взрыва сверхновой вырывается в космос.



Comments

Our solar system

The solar system we call group planets, requesting on their orbits around our stars - the sun.

Our solar system has emerged about 4.6 billion years ago.

As has our solar system

The second step

The cloud of gas and dust beginning to compress - perhaps under the action of shock waves from the explosion of a supernova nearby.

Step Two

There has emerged a ball which rotates, ascetism vsè more gas and dust and became more flat, forming the disk. This disk gradually increased and rotate vsè faster.

Step Three

The central part of compressing the cloud became vsè hot until the beginning of light, becoming a star.

The formation of stars, equal to the weight of our Sun, takes approximately ten million years.

The fourth step

When a star light, dust in the disk drive around the neè started slowly get lumpy in clots. These agglomerates gradually collected in stones, and those - in the world, requesting around our Sun on the orbits. The two main groups of planets: closer to the sun, where the sleepy, planet stony; away, Mars, gas: a thick layer of the atmosphere, consisting of gases that surrounds the liquid inside the area of the world in which, there may be a tvèrdoe kernel.

Jupiter is the largest planet in the solar system. It would appear that he played a primary role in this space harvesting ".

Step the fifth

The world forced to orbit, absorbing all the pieces of substances, encountered on the path.

Step of the Sixth

Hundreds of millions of years after the world began to move to the permanent orbits on which move and today. As well as pieces of substances, remaining in space, were either in the asteroid belt between Mars and Jupiter, or much further, for the Pluto in zone Kuiper.

Are there other solar system, similar to our?

For many century astronomers suspected that in addition to our Sun and other zvězdy around which the appeal of the planet. But guess the existence of exoplanets confirmed only in 1992, when it was detected planet, treats around the body of the deceased massive star. The first planet, treats around the present, bright radiant stars, was opened in 1995. The astronomers have already several hundred exoplanets, and some of them are moving around the stars, very similar to our Sun!

Exoplanet - this planet, which is not around our Sun and around other stars.

If the world were only at each tenth stars of our Galaxy (it is called the Milky Way), this vsè as well would mean that in one only our Galaxy - 20

Billion Space Astrometry systems!

Some of them are likely to very similar to our solar system, some are not similar. For example, a planet in the system of a double star could see the sunrise and sunset is not one of the Sun and the entire two. Knowing the distance from such planets before their stars as well as the size and age of the stars, you can calculate the likelihood of life on these planets.

Most of the famous us exoplanets in systems of other of stars is very large in size with Jupiter or even more. And this is understandable because the more the planet, the easier it is to detect. But now astronomers are beginning to open the world smaller, the stony - and, according to the distance from these planets before their stars, they may be similar to our land.

The dangers facing our planet

The collision with the asteroid

Asteroids - the stony celestial bodies, remaining after the formation of the Solar system about 4.6 billion years ago. The calculations uchěnyh, in our solar system millions of asteroids.

Asteroids are the most different sizes: from several meters up to several hundred kilometers.

Sometimes the asteroid collapses with its orbit - for example, under the action of the gravitational attraction of neighboring planets and can move to the land, leaving it to the clash.

About once a year the stone the size of military servicemen were machine break into the atmosphere of Earth, but usually fails, de just at this moment another bomb burst right up to the surface of the planet.

Meteoroid - this is the stone, flying in interplanetary space our solar system. If the same it drops to the ground, we call it the dirty joke ?.

Approximately once in several years on the ground drops the stone size of a football field, a few million years of land subject to impact of the space object - the asteroid

Or the comet is so large that deposits in our days, the existence of civilization would be under threat.

If the asteroid or comet is a huge "snowball" from the stones and the ice worn around the Sun - flew to the surface of the Earth and penetrated crust on the entire planet could begin volcanic eruptions. While there is nothing life on Earth is not intact.

65 million years ago in our land crashed into the asteroid. It may be that the strike has caused the disappearance of the dinosaurs: shot up in the air the dust cloud overshadow the sunlight, causing the dinosaurs and many other living beings were doomed to extinction.

Surge of gamma-radiation:

The Game Is Over!

Another threat to the survival of mankind - gamma-rays from space.

When the massive star, died, explodes, it sends to the outer space not only growing cloud raskalènnoy gas and dust, but Deadly outbreaks of gamma-radiation - two powerful thin beam as the beacon. If the land is directly on the ways such beam and if the gamma-ray burst proizoshèl close enough to the US, the Beam destroyed to our atmosphere by filling out the heavens figures 1 and 3 clouds of nitrogen.

But such outbreaks commute rarely. As well as to present to cause us harm, surge should occur within a few thousands of light years and the beam to the pleasing exactly in the ground. So that astronomers, carefully studied this question, not too worried.

Self-destruction

We and themselves, without asteroids and gamma rays, have already caused its planet very much harm.

The population of the Earth - more than 7 billion people.

The land is suffering from perenaselènnosti.

And this means that we need to make vsè more food - and therefore vsè stronger depletion of the natural wealth of the land and throw in the atmosphere vsè more gases. On climate change were and Ukrnafta many disputes, but in one uchèneye sure tvèrdo: on our planet has become warmer, and is due to human activities. It is expected that global warming will continue, and this means that some areas of the world will suffer from the heavy rains and the other - from the drought. The level of the World ocean will rise and the inhabitants of coastal areas pridètsya tight.

It is hardly not every fourth mind mammals and each of the third type of amphibians on our planet are facing extinction.

The people on the ground vsè more and more, and the representatives of other species - vsè less and less. The extinction of the animals - the immense problem; in our eyes whole groups of species disappear from the face of the Earth. What a pity it is that we reshape our excellent unique planet, barely starting to understand how it is!

The theory of the entire

Throughout the history of people watched the striking and miraculous that we surrounds and asked questions: "What is this for objects Why They are so moving and changing Always whether they were That they tell us about our origins????" only in the past few centuries humankind has begun to find scientific answers to these questions.

The classical theory

In 1687 year Isaac Newton in his book "Mathematical start natural philosophy" was first formulated three of classical mechanics that describe the influence of forces on the movement of objects and the law of the world gravity, reading that any two bodies in the Universe are attracted to each other thanks to gravity. It is thanks to this effect we do not fall from the surface of the Earth and the land is drawn around the Sun, and it is thanks to this effect created the planet and zvězdy. At the level of the planets, of stars and galaxies force gravitational attraction is the architect of the grand buildings of the Universe. The laws of Newton allow you to place in orbit artificial satellites and send the spacecraft on other planets. However, when it idèt of bodies with a very large ground or very fast moving,

The laws of Newton

The laws of the Movement of

1. Any body remains in a state of rest or uniform and the straight ahead until the unless it is not attached to compel forces to change this status.
2. To change the number of the movement of the body in proportion to the attached to the driving force and occurs in the direction of the straight on which this force operates.
3. Step there is always equal and opposite the opposition, in other words - the impact of the two bodies on each other are equal and directed to the opposite side.

The Law of the world gravity

Each body in the Universe attracts every other body with a force (directed along the straight, connecting these body), directly proportional to the masses of the bodies and back a pro rata the square of the distance between them.

The quantum theory

The classical theory is suitable for large objects, whether the galaxy, zvězdy or even bacteria, but the behavior of atoms it explains. Moreover, according to this theory, atoms could not exist!

In the beginning of XX century physics have realized that they want to completely new theory which would explain the properties of very small objects such as atoms or, say, electrons, - the quantum theory. The version of this theory, sum all modern knowledge of basic Particles and Fundamental Interactions, is the name of the standard model. It describes the particles of which is a substance (quarks and electron-muon mass difference is also discussed), the particles - vectors interactions (gluon, Foton, bozons W and Z) and Higgs bozon (which the most difficult

Detect) required for the explanation of some of the masses of other particles. Uchène Many believe that it is too difficult and are looking for a model the digitally remastered. To the same where in this model tèmnaya fabrics, open astronomers? And as the divergences? Particles - the carrier of the gravitational interaction is called "gravitons", but è è it is difficult to include in the standard model because the gravitational interaction between special: it change the shape of the space-time.

In the search for the theory of the entire

The theory of the disclosure of all interaction and all of the particles - "theory" - may not be similar to all known theory because the neè you want to explain not only the evaporation losses, but the space-time. But if this theory is possible, it should explain the physical processes in the Universe, including chèrnye hole, a large explosion and the future dalèkoe space. The emergence of such a theory would become the great scientific victory.

The Moon

Question: When emerged the moon?

Answer: For the assessment of uchènyh, more four positions billions of years ago.

V.:as it emerged?

Dc: Uchène believed that an body of the size of the planet battle had begun in the ground, forming the in-orbit raskalènnoe cloud of dust and stones. As it cools down the cloud dust and stones in the nèm planets were attracted to each other and so gradually evolved the moon.

V.:What are the dimensions of the moon?

Dc: *The Moon* much less land: in the globe could fit 49 moons. The pull of the Moon weaker earth gravity. If the Land you weigh 45 kg, the Moon weigh to less than 8 kg!

V.:Is there a lunar atmosphere?

Dc: None. That is why the sky and the Moon always seems chèrnym and therefore, if remain in the shadows, the sky vsè zvèzdy time visible.

V.:As humankind attributed the Moon before the uchène investigated as it formed?

Dc: in ancient times there is a legend that the Moon is a mirror or the same heavens bowl in the night sky. For many centuries people thought that the Moon has a magic force and can affect the life on Earth. In opredelènnom sense they were right: the Moon really affect on the ground. But no sorcery there is. The pull of the Moon affects the Earth oceans, causing the tides.

V.:Could there be life on the Moon?

Dc: Life On The Moon is possible - with the exception of the cases when the creature in order to space space suit. But you consolatory prize: accumulate evidence that the Moon contains much more water - the main ingredient required for the existence of known us life forms, than thought uchène just a few years ago. But this water

Frozen, so that those who have contrary to emigrate to land on the Moon, pridètsya elitism to lead the water in the friendly for the life of the liquid state.

V.:visited the Moon representatives of the extraterrestrial civilizations?

Dc:people visited the Moon 6 times. From 1969 to 1972 year on the surface of the Moon visited 12 American astronauts. Is it possible that the eschè until the land of human civilization on the Moon, our nearest neighbor, called good wins and left the traces of their stay? The likelihood of this very, very low; however some uchèneye on the ground again proceeded to examine the lunar ground in the search for a confirm this hypothesis.

The emergence of the Universe

There are many different stories about how the did our world. For example, according to the myths of the Central African People Cuba at the beginning of the were only darkness, water and the Great God of the localities. Once the Bumba ill the stomach, and he spewed sun. The Sun dried part of water and a land. But the abdomen from Bumba and not proshèl, and he vomited out of the eschè Moon, zvèzdy, animal - the leopard crocodile, turtle - and, finally, the rights.

The other peoples - Other history. All these myths - not that other, as the ancient attempts to respond to the most main questions:

- Why are we here?
- Where do we come?

The first scientific evidence required for the answers to these questions, revealed some 80 years ago, when it was found that other galaxies are removed from our. Is, the Universe Expands and the Galaxy Friedrichshafen. And this means that in the past they were closer to each other. Almost 14 billion years ago the universe was very hot and compressed. This time we call a large explosion.

Started with a large explosion, Universe Expands vsè faster and faster. This is called inflation - the Universe blown out of the prices in the shops. Only here is inflation of the Universe in the early èè occurred much faster than the market inflation. We call for inflation of the "high", when prices for the year increased twice; the size of the same universe of a second doubled the repeatedly.

Because of inflation the universe has become very large and very flat and smooth. But not completely smooth: in some èè field were tiny deviations. Because of these deviations have tiny differences in the temperature of the early universe; we find them in the microwave background radiation. These variations mean that some areas of the Universe Expands slightly less quickly. Gradually these slow areas no longer expand and contract again, forming of the galaxy and zvèzdy. These deviations and we owe their existence. If the early universe was completely smooth, there would be no of stars nor the galaxies, and therefore could not arise life.

Stephen

A large explosion - lecture

Imagine that at the moment at the beginning you are sitting inside the Universe (it is clear, however, that sit outside of the Universe would you not). In doing so, you must say, conquering, because the temperature and pressure in the broth is a large explosion - it is inconceivable that an incredibly high. All matter that we see today around, was then every last in the space of the size of the much less than the atom.

Was only a tiny proportion of the seconds after a large explosion, but in all directions, where neither see, vsè looks quite the same: not rising - home prices in the flame ball, and the sea raskalènnoy matter fills out the vsè space. What is the matter? We do not know. May be, particles, which in our time there is no, may be, even lacing "strings"; but it is certainly exotic matter that we with you is hardly given to see even in the most large accelerators particles.

This indefinitely small ocean very hot exotic matter is expanding as the rastèt fill them space. Fabrics smears during all the parties from you and the ocean is not so thick. The farther it leaking, the more expanded the space between you and it - the faster it is removed. A matter which the farthest away from you, deleted faster than the speed of light.

And very quickly - in the same first and second after a large explosion - is the many complex changes. Because of the expansion of the tiny universe hot exotic fluid in the tiny ocean cools down. In the Universe are abrupt changes like those that occur with water, when it freezes and turns into lèd.

When the new universe vsè eschè much less than the atom, one of these changes in the fluid causes the tremendous increase in the rate of expansion, called the inflation. The universe is twice and then twice and then eschè eschè and eschè - and so eè dimensions are doubled approximately 90 times and is the transition from the scope of elementary particles to the magnitude of the rights. As we, enveloping the bed, straighten sheet and stretching the Universe straighten all burrs and convexity of matter. In the final schète observed our universe becomes very smooth and almost the same in all directions.

On the other hand, the smallest chatter marks in the fluid too stretched and lengthened that later would boost the formation of stars and galaxies.

Inflation has stopped. When this is a huge amount of energy, why there are many new particles. Exotic matter has disappeared, ie Ye with grave changed more than we have known particles: quarks (this is the building blocks for the building of Protons and neutrons - which emerge later, when will not so hot), antiquarks, gluons (flying between gorishnii and antiquarks) , the photons (particles of which consists of light), electrons and other particles that are familiar to physicists. Among them can be and particles témnoy matter, but although they on the idea should arise, we until eschè does not understand that they are.

Where the same gone exotic matter? Part of the eè during inflation Magpie flew away from you in those areas of the universe of which we may have to see; another part of the lower the temperature of the dissolved on less Exotic Particles. Fabrics around you is not a hot and heavy as before, although until eschè hot and heavier than today, where the, including inside of stars. The universe is now filled with plasma - Hot glowing mist, consisting mainly of quark antiquark and gluon distribution.

The expansion continues (much slower than the inflation), and gradually decreasing temperature so that the quarks and antiquarks are already able to communicate in groups of two to three, forming protons, Neutrons and other particles known as hadrons is tens; as well as antiprotons and other antineutrons antiadrony. Via the illuminated misty plasmas there is little that can see and of the Universe in the meantime have already marked the one second.

Then begin Home | that last a few seconds: this is the mutual destruction of the greater part of the previously proizvedènnoy matter and anti-matter giving rise to flows of new photons. Mist now consists mainly of protons, neutron, electrons, tèmnoy matter and photons (more), but charged protons and electrons do not allow photons from bucket too far, so the visibility in this spreads and the cooling fog ostaètsya very weak.

When the Universe is already a few minutes for the survivors of the Protons and neutrons are combined and form the atomic nuclei is predominantly a core of atoms of hydrogen and helium. They are also charged, therefore, mist continues to thick and through it is not visible. At this stage of the substance from which consists of mist, recalls that in our time is located inside the of stars, - only this substance fills the entire universe.

After the reckless activity of the first minutes of the Universe in the several hundreds of thousands of years ostaètsya virtually the same - continues to expand and cool, hot mist constantly diluted, dim and feel a tug on my arm as the length of the light waves increases the expense of expansion of space. Then, through 380 thousands of years, when a part of the Universe, which subsequently will be visible from the Earth, expands to millions of light years, mist finally, dissipated: electrons captured cores hydrogen and helium and formed entire atoms. Since the electrical charges of electrons and kernel mutually compensated, these atoms do not bear the electric charge so that the photons are already can move without obstacles - the Universe has become transparent.

That same you see now, ten days later the hundreds of thousands of years until the Mist cleared? Only dimming red glow in all directions. The space continues to expand the length of the waves of the photons - stretch and this glow becomes redder and vsè vsè dimmer switch. Finally this light at all perestaèt be visible. Everywhere, where neither here, only darkness. We entered the space Tèmnye century.

The photons from the last illumination since the and traveling over the Universe, constantly becoming even redder eschè; today they can be found in the form of a relict of the cosmic microwave background radiation; they and are now widespread Some twenty swine's carcasses to the ground.

These Tèmnye century universe lasts a few hundreds of millions of years and throughout the time to look in the literal sense is not the. The Universe continues to be filled with a cloth, but almost all of it - tèmnaya fabrics and the rest - gases, hydrogen and helium and nothing of this does not give rise to new light. However, in complete darkness quietly changes have occurred.

Chatter marks, once the smallest, but reinforced inflation means that in some areas of the Universe the weight of us a little more medium. Consequently, the adhesion of these areas is increasing, drawing eschè more than the earth and tèmnaya fabrics, hydrogen and helium are attracted closer to each other. Slowly, for millions of years, as a result of the growing gravity appear clots tèmnoy matter and the Gaza Strip, which gradually grow to retract the vsè more matter. Sometimes their growth accelerates - when they face and converge with other tar balls emanating from vessels which disposed. When the gas enters the These clots, its atoms accelerated and hot. The and the case this

The gas becomes so hot that perestaèt compress; cool down, he may only named Napoleon photons and compress - only when faced with other cloud of matter.

If the cloud of gas is compressed too, it falls on the marble tiles drops, such dense that the heat of them already may not break out. In the final schète reached the point when the hydrogen nuclei in the center of the droplet size is very hot and are attracted to each other that are beginning to get lumpy (combined) in the kernel helium and radiate nuclear energy. You are sitting in one of these contracting clots tèmnoy matter and gas (because that is where the through the many-to-many years would be our Galaxy); and what is your surprise when the darkness around you suddenly menu which offers more than just salads in bright light is broke the first of the closest to you the droplet size. So the first born zvèzdy. This is the end of the Tèmnyh centuries.

The first zvèzdy quickly burn its hydrogen and the last stages of its life connect together all of the kernel which only can find to create the atoms heavier than the helium atoms: carbon atoms, nitrogen, oxygen and other more tyazhèlye atoms which are today around (as well as the inside) us with you. These atoms, like let me alone, dispersing back to the closest gas clouds in the enormous explosions and again carried away by a in the pile with education, a new generation of stars. The process continues: from the accrual of gas and ash generated new zvèzdy, then they die and again scattered ash. As the birth of the new of stars our Galaxy - The Milky Way - takes the spiral fan design. The same occurs and in other clusters tèmnoy matter and gas, scattered on the visible universe.

Is nine billion years after a large explosion - and here is from the hydrogen and helium and the ashes of the dead burned of stars formed the new young star, okruzhènnaya planets.

Eschè through four and a half billion years of the third planet from this star is the only place in the known to us in the universe, where will be able to live and feel the representatives of the human race. They are - that is, we are with you - will see the sky zvèzdy, cloud of gas and dust in the galaxy and the cosmic microwave background radiation - but not the worlds tèmnuyu, representing a large part of the matter in the Universe. Do not see we have and those parts of the Universe, which are so far from us that even the photons their relict radiation eschè not flew to the earth; and there are, perhaps, such part of the Universe, the light from which have never reaches our planet.



The expansion of the Universe

Examining the night sky with 100-inch telescope installed on the Mount Wilson in California, the American astronomer Edwin Hubble telescope has detected that some vagueness - vague buildup of the glowing dots in the sky - The Galaxy, such as our nearest galaxy ways (although the most different size), and each of them contains billions and billions of stars. And eschè Hubble telescope has detected a striking fact: other galaxies are removed from us and what they further, the above their speed. Suddenly proved that our Universe is much, much more than the decided to think. The Universe Expands: the distance between the grand with time increases. It is possible to imagine the Universe as the surface of the air world on which the painted circles - galaxy. Ifn't promise ball,

Red Shift

Hot celestial bodies, for example zvèzdy, emit visible light, but also because the universe is expanding, zvèzdy in distant Galaxies are removed from the ground. Because of this their light, flying to us is stretched, prichèm the stronger than the Faster removed star. The stretching of visible light feel a tug on my arm; this is called an unusual feature red offset.

Iasc meeting

What Is the vacuum and how does it relate to vacuum cleaners?

The vacuum - this space is so empty that in nèm no air. For example, if entered the pump from the rooms are all air, we get a vacuum.

The vacuum cleaner is dust extraction device vacuum action.

B The vacuum cleaner air pump sozdaèt a weak semblance of vacuum, helps you suck all up to one specs. But this is not the vacuum of which we now speak. For our, the experiment would be incomparably more powerful pump.

B Crt tubes of the Large Hadron Collider a vacuum like space: In nèm is no molecules of gas!

Remove from the rooms are all the particles of the air is not easy.

But even if the room no atoms, it is vsè contains radiation:

- Infrared photons, radiated tèplymi walls of the room
- radiophotons from television transmitters
- Microwave photons, remaining from the large explosion
- Other particles, flew from space (eg, neutrino, radiated Sun)
- And even tèmnuyu fabric!

And if we managed to remove this radiation, cooled, into tèplye walls? Then our room would become entirely empty - more empty than the space between the grand! However, it vsè as some of the remaining to be. This "something" - quantum fields that remains, when there is no photons, neutrino, electrons and all other particles. The condition of the quantum fields in possession of the minimum energy physics, referred to as the vacuum state; it is in this condition, without any of the observed particles and breakthrough to our mythical room.

But if we could as should be peer, made out to tiny ripples in space-time and gravity - the gravitational waves.

The word, we may seem that probable and proven the room air molecules, we fully eè devastated, but this is not the case!

If you add in the vacuum condition energy (Physics would say - initiate vacuum), nèm appear (particles and amplitudes). It is considered that such a vacuum - status with minimum energy. May be and other vacuum status on the other energy - if their proceedings, they create the familiar to us the types of particles. It is possible that in the early universe when the temperature was

Much higher, space for some time existed in the status of the false vacuum, with more high-energy and its particles today seemed exotic. When the temperature has dropped, this false vacuum must was come to the condition of the current vacuum with low energy. The true vacuum is the vacuum is indeed with the minimum possible energy.

There is not the slightest reason to believe that any of the earth experiment can plunge us in the condition of a different vacuum!

The space-time and the relativity of

Chetyrèhmernoe space-time

When we want to go to a place on the ground, we usually introducing this place in two dimensions - north-south and east-west. On the principle of the constructed geographical maps. We constantly take two dimensional directions. As to somewhere within walking distance or a short drive away? Vperèd or back to the left or right. This is because the surface of the Earth is two-dimensional.

And here is the pilot samolèta, selecting the direction is not tied to the surface of the Earth! Samolèt can fly eschè and up or down; therefore, to its position on the surface of the Earth is added eschè and height above the surface of the two measurements is added to the third. When 1 Ye with grave tchik Vedas Ye with grave t samol Ye with grave ie, the direction of the North ", or" the East ", or" up "will depend on the location of the samol Ye with grave that." Up ", for example, means" further away from the center of the Earth ", "up" over Australia and "up" over Great Britain - this is totally different direction!

The same can be said and the Commander of the space shuttle of the far-from the land. The commander of the ship can move in trèh dimensions where the wish - but these areas will always be three because the space in which we cherish, our land, our Sun, zvèzdy and all the galaxies, - this is the space trèhmerno.

And, of course, when you want to get, for example on the day of the birthday of a friend or the football match, little to know where will be held this event - to eschè know when the. Thus, any event in the history of the Universe must be four coordinates: three spatial and one temporary. Therefore, describing the universe and vsè that in it, we deafening notion chetyrèhmernogo space-time.

The relativity of the

Private theory of relativity Einstein stipulates that the laws of nature, including the speed of light, must be one and the same regardless of how fast the moving observer. It is easy to see that the two rights that are moved relative to each other, come to different conclusions on the distance between the two events: for example, two events that occur in one and the same jet samolète, for the observer on the ground will be divided into the distance overcame samolèt in between these events. So if the observer in the samolète and the observer on the ground decide to measure the speed of light signal,

Altitude of the tail samolèta to his nose, the distance travelled by the continuously since the alarm until its income in nose samolèta and you have different. As well as the speed is the distance delènnoe at the time, they also deeds match the question of how much time has passed between the accelerator pedal and prièmom signal, - if these observers agree on the question of the speed of light (in the nèm , according to the Einstein theory, they both times agree!).

It follows that the time, contrary to the opinion of the Newton, not entirely: there can not be indicate the time of the event in such a way that all the agreed. On the contrary, each observer status should be its own measure time and two observer, moving relative to each other, will receive different evaluation time.

To test this theory in the world fares polèt were sent a very accurate atomic clock. The return has proved that they are a little behind from the same hours remaining in the ground and were vsè time in one and the same location. This means that if you have to fly around the Earth, you can extend the life!

But this effect is very low (about 0,000002 seconds for one revolution), and its easily can be minimized if the constantly to eat the food, which fed in samolètah!

Galaxy a

A galaxy (it the same Andromeda, it the same M31) - the closest to our nearest galaxy to the Milky Way is a galaxy. The Milky Way and a - the largest in the local group of galaxies, which consists of at least 40 neighboring galaxies, chloride to each other.

The Galaxy A2, located at a distance of 2.5 million light years from us, - not the nearest galaxy to us (this rank as soon as possible belongs to the representations of the galaxy in the SABT (Large Pès), but the nearest from comparable to our size and weight.

Modern raschèty to suggest that the Milky Way (including tèmnuyu fabric) has more ground, but in more Kevin Sorbo of stars.

As the Milky Way - a spiral galaxy.

In the center of the Andromeda Galaxy, as in the center of our galaxy, is a supermassive chèrnaya hole.

As our galaxy, a has several (as at least fourteen) satellites - the runt galaxies, seeking around neè on orbits.

Unlike the majority of galaxies, a applies to objects, the light which is blue offset. The reason is that the expansion of the universe and the galaxy are removed from each other, overcome repulsion between our two grand: Andromeda is attracted to the nearest galaxy to the Milky Way and at a rate of approximately 300 km / with flies to us. We can experience with it after approximately 4.5 billion years and gradually merge and can and to miss. Clashes between the grand not considered the unusual, Teckel galaxy in the Large how RSS works seems to be now merges with the milky Putèm!

The homogeneity of the space

To apply the general theory of relativity to the universe as a whole, we usually do the following assumptions:

- All the seats in the space behave in the same (homogeneity)
- And all the space have the same properties (isotropy).

Hence we get the picture of the Universe, which:

- Has the uniformity of the space
- Begins with a large explosion
- And then evenly expands in all directions.

This picture clearly confirm the astronomical observation - that we see in space using terrestrial and space telescopes.

Since some of the same laws of physics apply everywhere, we assume that all the galaxies are formed in a similar manner. Consequently, zvèzdy, planet, asteroids, comets in distant galaxies should be similar to the zvèzdy, planet, asteroids and comets our Milky Way.

And the same vsè universe may not be fully compete in space, otherwise as the appeared in the galaxy, and zvèzdy zvèzdnye system, the planet and the people? To understand how emerged and have begun to flatten the first cloud of gas and tèmnoy matter, must be allowed to single ripples in this uniformity.

Where did the founding fathers until the until the end of the clear. According to the best at the moment theory, it occurred from the smallest of quantum fluctuations which increased during the rapid expansion - inflation, - the incident for the tiny proportion of the first seconds after a large explosion.

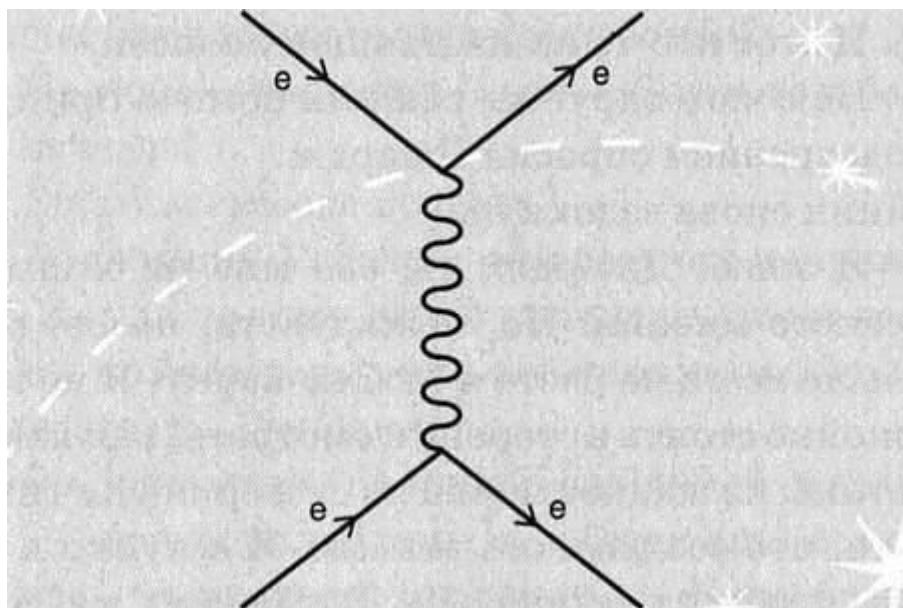
Collision of particles

If not for the interaction of the particles after clashes in devices such as the Large Hadron Colider (LHC), should not stray from them exactly the same as there were.

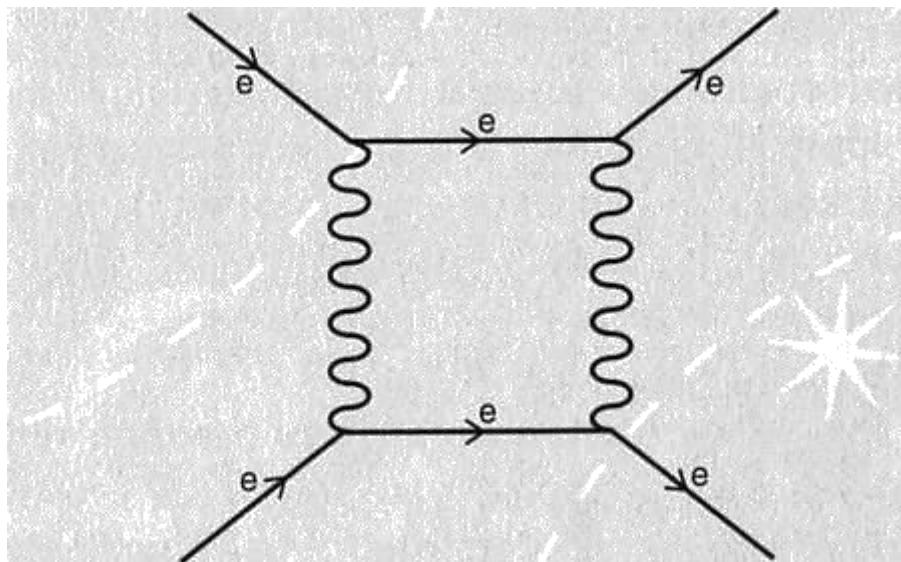
Interaction between the same allow elementary particles in collisions influence to each other (up to the other particles!) Putèm radiation and the absorption of special particles - Calibration bozon count, acting as vectors of fundamental interactions.

Physics portray the collision of particles with the Feynman diagrams. This diagrams that show how the particles in a collision can lead to in relation to each other. Each chart of Feynman diagrams - only a part of the description of the behavior of particles in a collision; to obtain a complete picture of the collision of the chart you want to gather together.

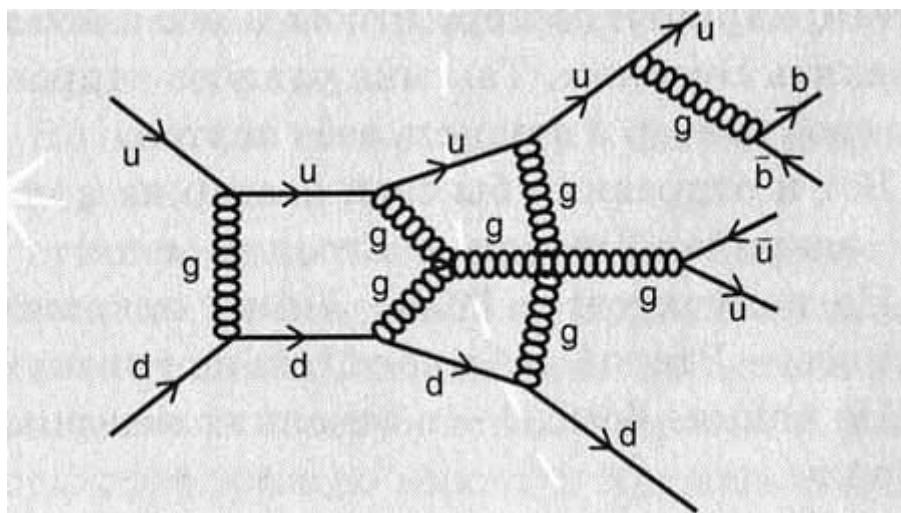
Here is a simple diagram on which the two electrons are approaching to each other, share a single photon and then continue its path. The arrows indicated the direction of time - from left to right, the wavy line is the Foton, direct lines are electrons (E). This figure includes all the cases when the Foton moves up and down or up and down (therefore the wavy line is located vertically):



The more complex processes describes the more complex of Feynman diagrams, to include more than one virtual particles. For example, the chart with two virtual photons and two virtual electron treatments:



In order to fully describe the or the reaction of particles, besschëtnoe amount and variety of charts. Fortunately, the uchënye learned to receive a very good approach, using only the simplest of the chart. Below shows that could occur at the Large Hadron Collider in a collision of protons! The letters u, d and b are labeled quarks, letter g - gluons:



Tèmnaya side of the Universe

One of the most simple questions which may come in the head person, is: what is in our world?

Of Parfia "the Greek philosopher Democritus suggested that vsè artists constructed from the smallest indivisible particles - atoms And he has the rights but for the last two thousand years revealed some of the details..

Vsè that there are in our world consists of combinations of 92 different types of atoms, is the elements in the periodic system - hydrogen and helium, lithium, beryllium, boron, carbon dioxide, oxygen

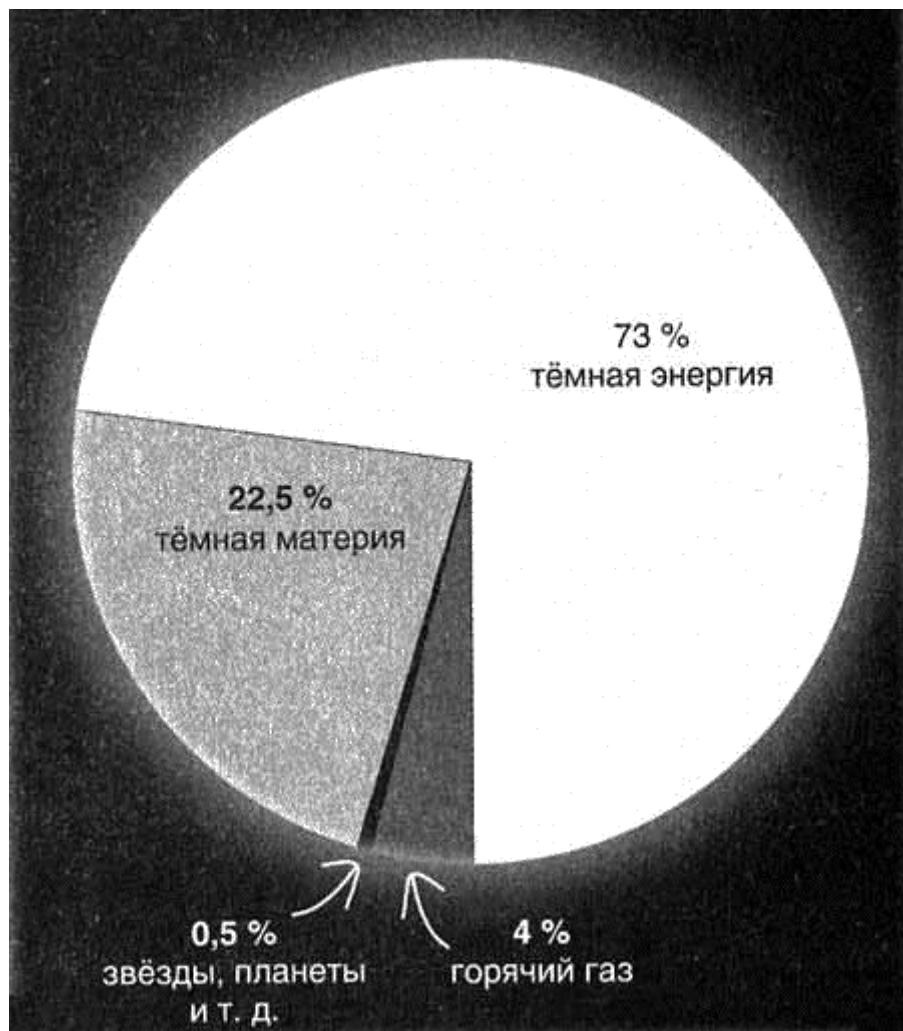
и So next to uranium (Number 92). Plants, animals, mountains, minerals, the air that we breathe and vsè that there are on the planet Earth, consists of these 92 elements. And we know that and the rest of the planet in the solar system and is our Sun and other zvèzdy also consist of these same 92 chemical elements. We are well studied atoms and cool get the hand to move them, receiving vsè that anywhere - including the and My Favorite fried potatoes! Chemistry - this is in fact the case and there is a science about how to build of atoms that vsè anywhere; you "Lego", where instead of detalek - atoms.

В Our days already know: outside of the solar system and there is a eschè that surrounds the incomprehensible huge universe with billions of galaxies, in each of which the billions of stars

и The planets. The same is the Universe? Here the and start surprises. Our solar system, other zvèzdy and planet consist of atoms; but, assuming that the rest of the Universe also consists of them, we oshibèmsya. It consists of a very strange things - tèmnaya matter and energy - to which we are as yet know much less, than on the atoms.

Nachnèm with digits: If you speak of the universe as a whole, 4.5% eè are atoms, 22.5% - tèmnaya fabrics, and 73% - tèmnaya energy. For a moment the head of the topic, note that is less than the tenth part of the atoms forms zvèzdy, planet or, for example, living organisms; the remaining the same atoms exist in the form of gas, is too hot to form the celestial bodies.

So, tèmnaya fabrics. Where we do about it? It is? And why we do not find the eè nor the land, nor even to the sun?



We know that it is because the strength of gravity èè holds together our galaxy and Andromeda and all the other large structures in the Universe. The visible part of the vagueness of the Andromeda Galaxy, as well as all other galaxies, is located in the middle of the very large - in ten times more of the visible part of the world - from the tèmnaya matter; astronomers called the ball-Galo. If not pull tèmnaya matter, the majority of the stars, solar systems and the rest of the galaxies, simply blast on the space where the fluid, and it would be very poorly.

Until that we do not know exactly what the consists tèmnaya fabrics (approximately the same was the case and the Democritus that correctly guessed about atoms, but I did not know what they are constructed). But some of that we vsè-i know.

The particles tèmnaya matter, unlike atoms, does not consist of the protons, neutron and electron: This is another form of matter! Not surprised: humanity took almost 200 years to open all of the chemical elements, and over time it was found many new forms of nuclear matter.

Since tèmnaya fabrics are not composed of atoms, it does not drew on them no attention - as and they on the neè. More of the particles tèmnaya matter not interested in even other particles tèmnaya matter. Physicist said would be so: particles tèmnaya matter interact with atoms and between a very weak, if interact. Therefore, when our and other galaxies have emerged, tèmnaya fabrics remained in a very large and sparse galactic Galo,

While the atoms faced each other and apartments in the center of the Galo, gradually forming zvèzdy and planet, composed almost entirely from the atoms.

Beyond, zvèzdy, planet and we with you belong not from tèmnoy matter, as well as of the atoms of the the "greater leadership in malaria control" particles tèmnoy matter.

However particles tèmnoy matter attraction around us: at any time in any tea cup naydètsya at least one such particles. And this tells you how you can check one bold hypothesis. The particles tèmnoy matter, of course, "are shy", but the same vsè can from time to time to leave quite noticeable trace in very, very sensitive detector particles. Therefore the physics built large detectors and placed them under the zemlèy (protecting from space radiation, bombarding land surface), to determine whether the halo of our galaxy are particles tèmnoy matter.

Eschè more exciting idea - to create particles tèmnoy matter in the accelerator particles, making energy in the ground on the famous Einstein formula $e = mc^2$.

The Large Hadron Colider (LHC in Switzerland, the most powerful in the history of the accelerator particles, is intended to create the particles tèmnoy matter and observe the them.

As well as the satellites in the sky looking for part of atoms that will occur when the particles tèmnoy matter in Galo accidentally face and generate a normal fabric (opposite process to which are trying to achieve with accelerators particles).

If any of these methods will bear fruit - and I hope that at least one yes prinesèt, confirmed that the greater part of the matter in the Universe are not atoms and something more. Represent? Here is the same.

Now we are with you are ready to speak about the greatest scientific secrets of all vremèn: The tèmnoy energy. I am sure that the mystery of this secrecy in the coming years will not be able - this is to be your generation. Perhaps the answer even perevernet with the legs to the head Einstein's theory of gravitation - the general theory of relativity!

We all know that the Universe expands and increases in size during the last 13.7 billion years since the large explosion. Since the eighty years ago Edwin Hubble telescope has detected this expansion, astronomers vsè tried to measure as it slows down the gravitation. Gravity is the force that is not daèt we fall off the ground and holds the planet on their orbits around the Sun - stop motion space glue. Gravity pulls the objects to each other, slows down the shells and missiles dropped from the land; so that and the expansion of the Universe would slow down the vsè in it all is pulled.

It is, in 1998, astronomers have found that this simple, but very logical idea is incorrect: proved that the expansion of the universe not slowed, and vice versa, accelerates. Found it thanks to the Special Property telescopes, rodnyaschemu them with the machine time: since the light requires time to fly to us through the Universe, looking at udalènnye objects that we see them as they were long ago. Using powerful telescopes, such as the famous Hubble Space Telescope, uchèneye able to determine that in the past the Universe expanded slower than it is now.

As such can be? According to the theory of Einstein, in our Universe is something eschè more strange than the tèmnaya fabrics, - something possession of "Siegel disk gravity".

"Repulsive gravity is gravity which does not attract objects to each other, and, on the contrary, pushes them from each other that is very strange It has received the name!" Tèmnaya energy "and may be a very simple: for example, the energy of the quantum of emptiness, - or, on the contrary, the extremely strange!: for example, the effects of an additional measurement of space-time As well as can be, no tèmnoy energy No and then replace pridetsya Einsteinian general theory of relativity to something better.

Understand that such tèmnaya energy, it is important and because the eschè neè depends on the fate of the Universe. Now tèmnaya energy presses on the accelerator pedal and the Universe Expands vsè faster, from which it can be assumed that the expanded it will forever, and approximately 100 billion years sky again sunk into darkness.

Since we do not know the tèmnoy energy, it can not be excluded that in the future it strikes on the brakes - and this will cause the collapse of the Universe.

The answers to all these questions to find uchènym new generations. May be, even you.

Michael

The Large Hadron Colider (LHC)

Cern

Cern (CERN) - European Organization for Nuclear Research - this is the largest in the world the international laboratory of physics of elementary particles, located on the border of France and Switzerland. An abbreviation of the CERN occurred from the French Conseil européen pour la Recherche Nucléaire - the European Council for nuclear research.

Cern was founded in 1954. Already more than half a century in investigating nèm elementary particles, including using colliders (accelerators).

B 1990 uchèny and CERN Tim Bèrnars-whether invented the World Wide Web - technology, some might characterize the CERN physicists to quickly and easily share information. This is now the "Web Site" has indeed become the world and very many do not represent a life without neè.

B 1983, the proton supersynch- (SPS) in collisions of protons with their are noted - experiments have been trying - were opened W and Z bozons mosquito vectors of the weak interaction. The proton supersynch-, integrated in the Ring tunnel protyazhènnostyu 7 kilometers in our days is preaccelerator protons for the tank.

B 1988, after trèh years works, was completed the construction of the new ring of the tunnel length 27 kilometers, projected at the depth of 100 meters. In nèm placed a large electron-positron (LHC Prev | Main | Next) for the collision of electrons with their are noted - operated at Beloyarsk NPP.

B 1998 began rytè underground halls for detectors of the large hadron collider. B November 2000 experiments on the Large electron-positron collider ended - it was replaced in the tunnel large hadron collider.

The first launch of the Large Hadron Collider was held in September 2008.

The tank

This is the largest in the world the accelerator particles.

The dvadtsatisemikilometrovomu ring tunnel stretches the two tubes - like giant electromagnetic jogging track, which join two counter-proton beam.

In tubes from which the sheathing virtually the entire air, sozdaètsya vacuum, as in the open space to the protons at svoèm ways not faced with the molecules of the air.

The tube of the Large Hadron Collider - the most are denuded place on earth!

Since the tunnel is bent, more than 1,200 powerful Magnets control the movement of the protons to those not faced with the walls of pipes. These magnets have \$, that is able to generate very large fields with very low loss of energy. For this to be cool liquid helium temperature to -271 degrees Celsius; this is colder than in open space!

In the Large Hadron Collider about 9300 magnets.

The full power of each proton will make 11 245 turns per second at a speed of 99.99% the speed of light. The second will take place up to 600 million direct confrontations between protons.

The tank is intended for collision not only of the protons and ions lead (cores of atoms lead).

The grid

Even the most modern equipment does not cope with the obèmom data which produce detectors tank: Approximately one megabyte to each collision. Computer algorithms to choose only the most interesting events - the remaining data, more than 99%, are discarded.

And it is expected that the data from the Large Hadron Collider will be about 15 million gigabytes of information in the year (enough to tie the score 75,000 personal computers with dvuhsotgigabaytnymi zhèstkimi drives). Hence the serèznaya problem of storage and processing of information - especially with the uchëtom that physics, who are these data are scattered all over the world.

The challenges of storage and processing of information addressed putèm faster data transfer via the Internet on the computers in different countries. All of these computers together with the computers in the CERN form processing network of the Large Hadron Collider (LHC Computing Grid), based on the grid technology and called simply "Grid".

The detectors

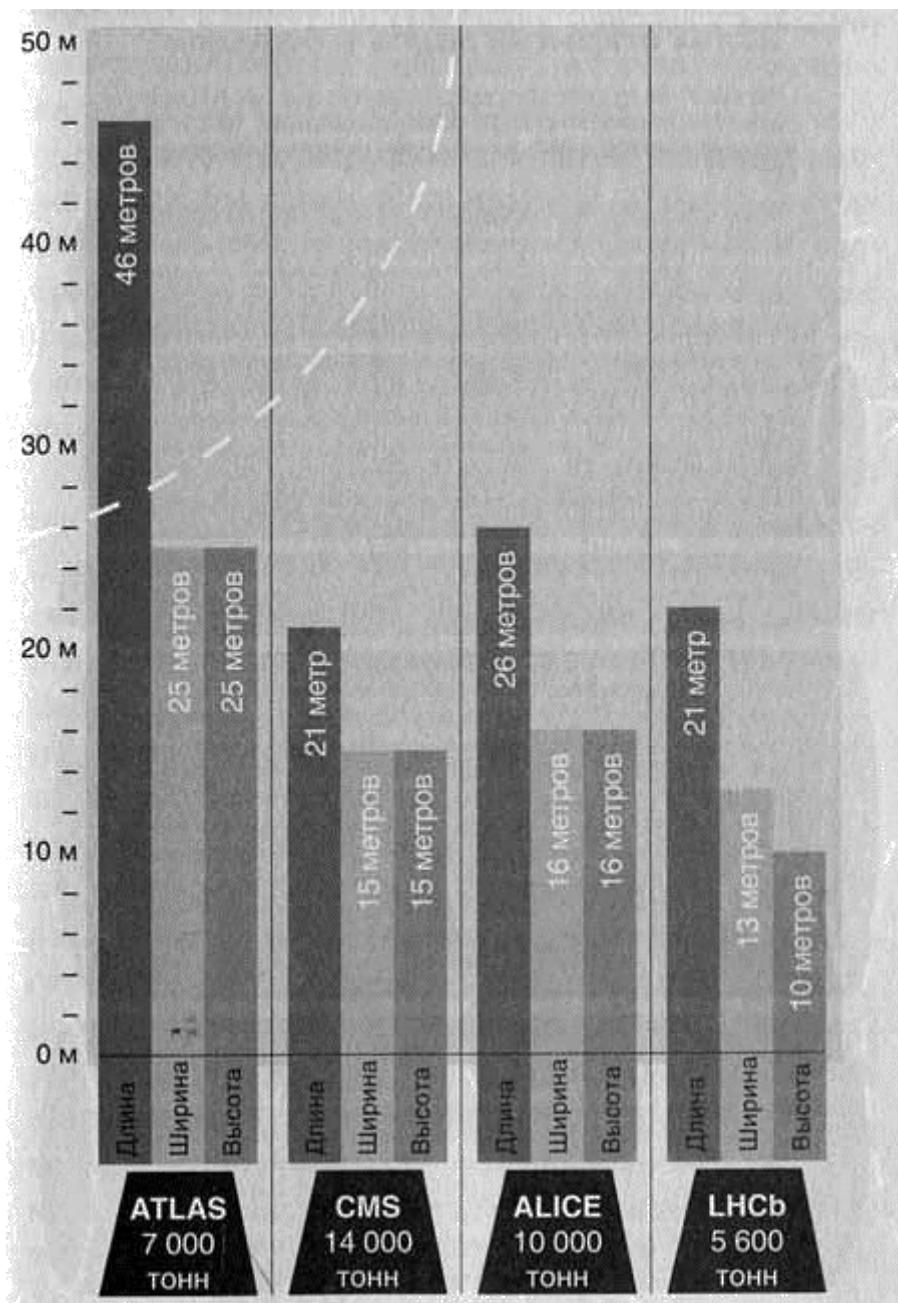
At the Large Hadron Collider are the four main detector, razmeschènnyyh in underground halls around the tunnel. To the beams have been precisely in those four positions points, where are the detectors, use special magnets.

The ATLAS is the largest detector in the history: 46 meters long, 25 meters wide, 25 meters height and weight of 7000 tons. It identifies particles that are produced during high energy collisions, making sure the trajectory of their flight and measuring their energy.

The CMS detector is designed differently than the ATLAS, but it is used for the study of the same processes (miscellaneous device these two detectors allows you to receive independent confirmation for each opening). The length of the CMS 21 meter, width and height - to 15 meters, and weighs it more than the ATLAS, - 14 000 tons.

The detector ALICE designed specifically to search for the quark-is found in plasma, posed by the collisions of ions of lead. It is considered that in the first moments after a large explosion universe existed in the form of such a plasma. The length of the detector ALICE 26 meters, the height and width of 16 meters, weight - about 10 000 tons.

[Prev](#) | [Main](#) | [Next](#) Detector designed to study the b-quarks. Its purpose is to clarify the distinction between absolute and antimatter. The length of this detector 21 meter, height - 10 m, width - 13 meters, weight - 5600 tons.



No discoveries to wait in the future?

The standard model of elementary particle physics describes: Fundamental interaction; particles that their enduring; three generations of particles of matter. But:

Only 4.6% of the Universe consists of a known us matter. The same is vsè rest? That represent a tèmnaya fabrics and tèmnaya energy?

Why elementary particles have the ground? The answer to this question will be available, if possible not only to detect and explore the bozon Higgs - particle, any animal now living standard model. The Physics of conducting these studies at the large hadron collider.

Why in the Universe much more matter than the antimatter?

In a very short time immediately after a large explosion quarks and gluons were such raskalènnymi that could not connect to and form the Protons and neutrons. At this time the universe was filled with a cloth in an unusual condition - the so-called quark-plasma is found. This plasma must be recreated on the Large Hadron Collider; detector ALICE is specially designed to detect èè and explore. Uchèneye hoped that, having examined the quark-QED (QCD) coupling constant plasmas, they learn about the strong nuclear cooperation and the development of the Universe.

The new theories of trying to include the evaporation losses (as well as the space and time) in the same quantum theory, which now describes the remaining interaction and elementary particles. There are the hypothesis that in addition to the familiar to us four positions measurements of space-time can exist and others. If the "Additional measurement" did exist, the collision of particles at the Large Hadron Collider will help them detect!

Whether many benefits from mathematics in secret the mysteries of the Universe?

It is obvious that in our world there are events of predictable and unpredictable. We all know that the sun every day dates in the strictly opredelènnoe time, but the weather changes without warning - unless, of course, you do not zhivète, as I, in Arizona, where almost always hot and sunny. You can with the evening to start the timer and there is no doubt that in the morning he wakes you at the right time, but not with the evening to choose clothing for tomorrow - the weather can and do not guess.

The events of the regular in the occurrence of which we do not doubt that describes using numbers - for example, the number of hours in a day or days in the year. The numbers you can express and less predictable things such as weather, - for example, the daily maximum temperature of the air - but one of these numbers is difficult to withdraw the pattern.

Our ancestors noticed in the nature of the many patterns: not only the day and night, but
и Replace vremèn, movement of the moon, of stars and planets, tides. Sometimes they describe these observations using numbers and sometimes simply have composed poems songs and poems. The desire to describe the numbers patterns of celestial bodies was inherent in many ancient peoples. It was interesting to predict the solar eclipse - the frightening and at the same time fascinating events when the Moon shade the sunlight and in broad daylight visible zvèzdy. In order to calculate the exact time of 2061, required many hiccups computing. Not always been able to count vsè accurately - but when managed, this produced at all great impression.

B Long time no one knew why the nature so often repeated patterns that can describe mathematically. But some 400 years ago some people have begun to explore these patterns more thoroughly. In different parts of the world, particularly in Europe, were skillfully manufactured devices for accurate observations and measurements: chronometers

и The Solar Clock, all the tool to measure distances, corners and time periods. Gradually emerged and Small telescopes. Researchers, who enjoyed these components, named themselves natural philosophers or natural scientists; indeed, this and were those that in our days called uchènymi.

B Inter alia, natural philosophers many have reflected on the fact that such a movement. Initially it seemed that there are two types of movement: the movement of celestial bodies - of stars and planets - and the movement of the bodies on the ground. We all know that if the shot, he shoot curved and does not need to be long powerless to make sure: If throw the ball under one and the same angle and with the same speed, the trajectory will always be one and the same.

Of course, our ancestors well knew that moving objects moving in simple and predictable paths. They knew this, because of the contingent of their life. The hunter must be sure that the stone, originating from the slingshot, or boom, kind of onions, today to be exactly the same as yesterday. Imaginative Australian Aboriginal peoples, there are the indigenous people of Australia, had managed to frame boomerang - flat curved propellant shell with amazing of flight trail, returning to the challenged.

The XVI century mathematics has extended beyond the simple arithmetic. There algebra and other methods and natural philosophers managed using equations describe many of the observed in the nature of the patterns, as well as the electronic stability program of flight booms and cannon. One simple equation describes the circle of another, slightly different from, the head is tilted in the circle is the ellipse, third - form verèvki between two pillars. Thanks to the progress of mathematics became possible to describe a great many of the patterns and forms of not merely in words but the symbols and equations. These equations the creation on paper and printed books, so that they could read and other icps under and mathematics.

But this was only a description (although, of course, very useful) natural patterns, but not their explanation. Vsè changed in the beginning of the seventeenth century through the Pentecost Italian uchénogo Galileo Galilei. We all know that when the subject drops with height, the more it approaches to land, the faster the flies. But how much faster for traveling through the second after the fall of the? After two seconds? Through three? .. Whether there is in this pattern? Galileo decided vsè this out. And it was experiment: drop objects, timing with time. To slow down the downward movement and thus facilitate the work, Galileo warden balls roll on a smooth house plane. And then applying the results of their observations and measurements methods of arithmetic and algebra,

The formula Galileo is simple: speed freely falling body increases in proportion to the time. This means that after two seconds after the beginning of the fall of the object falls exactly twice faster than the one second. But this is not eschè vsè. If the subject is not simply drops with height and thrown under opredelènnym angle, it not only drops down, but eschè and moves horizontally: According to formula Galileo, he moves on reflector dish - on the curve, already known flooding of geometry.

A decisive step was taken when the English uchénny Isaac Newton found as changes the movement of bodies (accelerates it or slows down) under the influence of the attached to the Force. And he described this very simple equation.

The force which operates in the case of falling objects Galileo is, of course, gravity, or strength of the world gravity. This force we feel constantly. Newton suggested that land attracts vsè down to the Center with a force proportional to the number of substances in the physical object is its weight. By associating in one equation of force and acceleration Newton explained the formula for the Galilei falling tel.

But this was only the beginning. Newton suggested that not only the land, but all of the body in the Universe - including the Sun, Moon, planet, zvèzdy and we are with you - capturing all the rest of the body and the strength of this attraction loose with the growth of the distance between them and, if to be exact - it is inversely proportional to the square of the distance between them. From the law the inverse square should be that if the distance from the center of the Earth (or the sun or moon) will double the force will decrease fourfold, if the distance increases in three times, the force will be reduced to nine times, and so on.

Using this formula and its equations, binding force and acceleration Newton was able to make complex mathematical prièmy (some of them he invented himself) to the movement of the planets and comets around the Sun under the action of the Solar gravity. Calculated it and the movement of the moon around the Earth. And all these raschèty were correct! More than that, it correctly described even forms of orbits! For example, astronomers found that the orbit of planets are the shape of the ellipse and the Great Newton their raschètami proved that and it should be! It is not surprising that all felt Newton hero and genius and English king even appointed its control mint.

However, the meaning of the Works Newton, posvyaschennyy laws of classical mechanics and gravity, much deeper. Newton suggested that the reading of the law of the world the gravity and the relationship between the force and acceleration, which he described as an equation is the laws of nature. It is the laws that must be the same act in all parts of the universe and at all times and in this always remain unchanged - approximately as God, which believed Newton. Before Newton many thought that the movement of the bodies of the land, whether cannonballs, ships or poultry has nothing in common with the movement of celestial bodies such as the Moon or the planet. Thanks to the various directions people learned that all the body of disobedience one and the same laws. Other uchèneye describe movement, Newton same explained it in terms of the mathematical laws.

In practice this was a huge step vperèd, because now anyone could be housed in a cozy chair with a pen, your worst enemy and paper and calculate the movement of any body, not seeing the body. For example, you can calculate the where the popadèt cannon core, issued with the defined rate under opredelènnym at an angle to the horizon. And you can calculate the speed of you want to release that it is never returned to the ground. Using the simple equations of Newton engineers can in the accuracy of the calculated, where should aim missiles to launch the Space Shuttle on the Moon or Mars, prichèm do this well before the appear the money for the construction of these missiles.

That is why science physics is the study of the basic laws of the universe, has the use Moore by force. Formulas and equations enable physicists to predict what the eschè no one knows - for example, the existence of the unknown planets. So was open Neptune: astronomers under the laws of the Newton found where the sky should be unknown planet affecting the movement of uranium; and we are now using the same laws predict the existence of planets, seeking around other stars.

Quite soon physics tried to apply the same principles to other forces such as electricity and magnetism - and, of course, has proved that and these forces are subject to a simple mathematical laws. Then, when began the study of atoms and their cores, revealed that their behavior can also explain in detail mathematical formulas. So that now in textbooks of physics very much formulas.

Some physics are defined question: will it always - or all laws and equations in one way or regulated in a single superzakon? Many talented uchèneyh looking for the relationship between the various laws and equations - and sometimes found.

Here is the famous example: in the XIX century the Scottish scientist James Clerk Maxwell has detected that you can combine the laws of electricity and magnetism laws; and when he is made and formulated the equation has proved that obedinènnaya "Electromagnetic" force can cause electromagnetic waves. By displaying the equations of the speed of these waves, the Maxwell found that it is equal to the speed of light. Nothing itself! Beyond, said Maxwell, light is an electromagnetic wave!

Searches superzakona, which would unite all the interactions are continuing. To minimize vsè together, need this genius. Probably, now he has already in school.

When I went to school, I liked one beautiful girl. È è called Lindsay. Once I did home work on Physics - met the task where you want to be calculated (that is to predict) the angle must be to leave the ball in the side of the hill, with some over slope to the ball flew to the maximum distance . And I met the task Lindsay

- She was in humanitarian class - SAT opposite me in the school library, why I was very delighted, although I think NV. She asked what I am doing and when I described the task, she was surprised to specified: "And you're going is read on the cleverly, without the ball Where do you know where he shoot??" At the moment I thought that this stupid question. Once this is set at home, you know you can. At the same the Lindsay raised a very important and very deep question. Why is possible using simple mathematical methods describe and even predict the events taking place in the surrounding world? Where come the laws of nature? In the sense of why the nature of all there are laws? And even if for some reason the it needed, why these laws are so easy to use, for example, although the law of the world gravity - inverse square law? It is possible to imagine the universe, described so complex and thin mathematical laws that were not under the force to reflect on even the most impossible mathematics.

No one knows why the Universe is due to using a rather simple math or why the human brain is capable of such explanation. May be, we simply lucky? The believes that there is a God-mathematician who created the universe that what it is. But we, uchène, bad debts in the ancient casters. May be, life could only occur in the universe with simple mathematical laws? In this case the nature of the obligation to describe mathematically, otherwise we would simply not be, and no one would think about that. Could it be that, universes there are many - and each of them has its own laws that do not similar to our, some no laws. The there is no physicists, nor mathematicians. As well as may and there is.

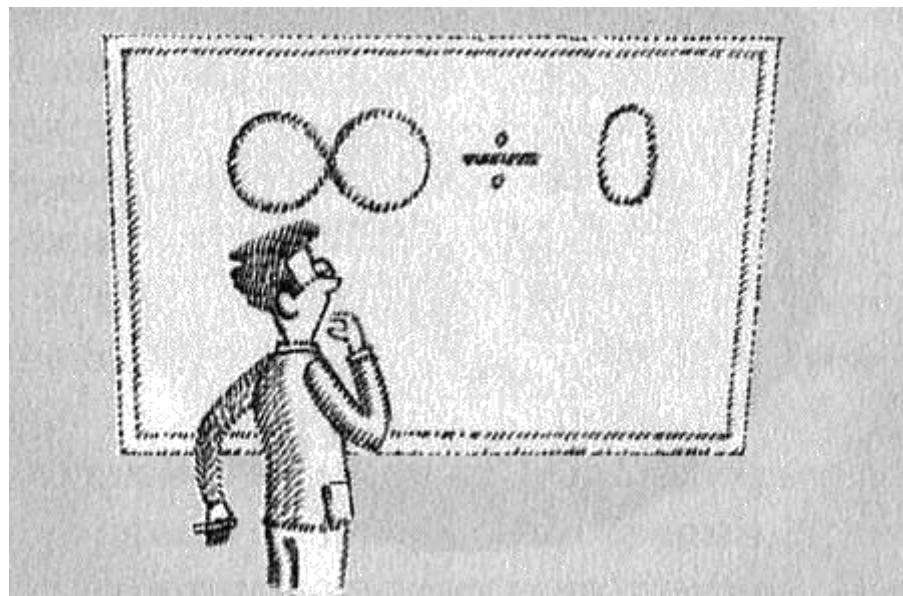
Frankly speaking, vsè is a mystery and many uchène believed that not their care è è from. They simply take the mathematical laws of nature as givens and rely on them in their raschètah.

But I am not one of those uchényh, and of those who have heard grieveth him without sleep in search of Reveals / conceals. I would like to find the answer. However, regardless of whether there is cause to the mathematical simplicity of the Universe, one thing is clear: the Physics and mathematics are inextricably linked. Humanity will always be needed and those who are experimenting and those who engaged in computing. And well that they exchange information!

Floor

Singularity

The singularity is a place where the mathematics used by the physicists, perestaèt act! Thus, as we approach the center chèrnoy hole (chèrnaya hole - one of the varieties of singularity) curvature of the space-time increases to infinity and in the heart of the normal mathematical rules do not work (for example, appears division by zero, whenever knows that the zero divide can not be!).



Sometimes the physical raschèt includes the assumption that the opredelènnny time is false and is detected the singularity. In this case you can correct the error, adjust raschèt: then mathematics again begins to operate correctly, and singularity disappears.

More interesting singularity, which is not so easy to get rid. In such cases it is expected that a new theory. For example, in the mathematics of the general theory of relativity arise singularity chèrnoy holes and a large explosion. Possible to understand what is happening in fact need is another mathematics.

The word, uchènym there than to address. They hoped that the theory to get rid of these singularities.



The space containing the vsè that we see around in the universe, is compressed to Zero - and Vayots Dzor all ways, leading in time to reverse. This is the are the singularity - the condition of the Universe in the time of a large explosion.

The quantum world

Neopredelennost and Côte Shrèdingera

The world of quantum physics - this is the world of atoms and subatomic particles. The world of classical physics - this is a world of people and planets. And these worlds seem very different:

In the world of classical physics

We can simultaneously to know where is the body and with what speed is moving.

Moving from the item in the item, body moves on the the defined trajectory. If the path is the wall with two holes, it passes through either one Wo, either through another.

We know that the body is moving the item in and not where the eschè.

Passive Monitoring does not affect the movement of the body.

In the world of quantum physics

We can not at the same time to know where is the body and with what speed moves - and perhaps can not know neither the one nor the other (this is the principle of the Heisenberg uncertainties).

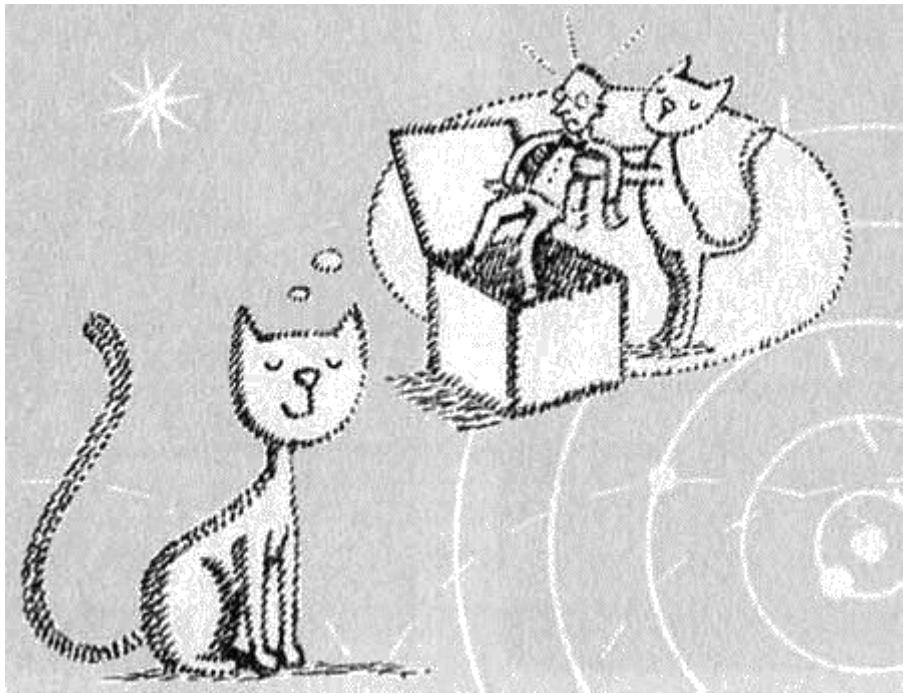
The particle moves from the item in the item in on all the possible paths, including through different holes; all these electronic stability program fold and form a wave function, de facto annexation of the item as well as the circles on the water.

Particle can be anywhere, where only the reach of the wave function. It was, we uznaèm through monitoring.

Monitoring of the wave function: for example, if we are seeing our particle in the wave function in this paragraph citation, that is in the collapses point (and then again at variance).

In the mailbox

Côte (creature from the world of classical physics) consists of atoms (and this is already the quantum world). Erwin Shrèdinger decided to apply the principle of Heisenberg uncertainty to the Dobrinja on 4 February. (Only, please do not be well with your pet friendly Shrèdinger in fact nothing with its palace stylings did not do -! It idèt on an imaginary coteau.) He submitted that it would be if the lock the cat in the halls and soundproof box , together with a number of radioactive substances, detector radiation and èmkostyu with poisonous gas. When razdaètsya detector signal (because the atoms of the Radioactive Substances apart, emitting radiation), opens automatically èmkost with poisonous gas. Question: whether alive Côte? The atoms in the box (including atoms, of which consists of Côte) are all of the possible conditions: in some of these statuses is radioactive disintegration and frees the poison gas in the other is not. Only after monitoring - in other words, by opening the box - we know whether alive. And this can not be with opredelènnostyu argued, alive Côte or mèrtv, because it in a sense is alive and mèrtv simultaneously!



The generalization of the "(they are the same even decades") and travel in time

Imagine that you ant, achromatic grouse on the surface of the apple. Apple hanging from the ceiling on the thread. Byalatsky said such a slim that lower and climb on it you can not so that the surface of the apple - this is your entire universe. You with the neè can not be avoided.

And now imagine that the worm gnawed in your Apple-end hole. You can get to the one half of the apple to another by any one of the two methods: on the surface of the apple (your universe) or via a wormhole, reducing the path.

That if our Universe is similar to the Apple? That if the there are such "even decades" (their eschè referred to as the "special facility Mole"), linking the one place in the Universe with the other? And if so, what they we see?

In the even decades should be two inputs, one at each end of the. One input can be located, for example, in London, in the Buckingham Palace where the Queen zhivèt, and the other on the beach in California on the west coast of the United States. Suppose that the inputs of the round. Look at the one that in London, you can see - as if in his globe! - As the mind of ocean waves, the raids on sand and swaying on the wind and palm leaves. And your California friend, looking in the round hole on its side, will see you in London on the background of the Royal Palace and the next to you time in the advised watch. But this is not the crystal ball: in these holes can log in! While in London, you step in this round hole, you nesèt on outlandish tunnel - and here you are already on the California beach, where each they throw at you with board for sèrfinga!

The inside of the apple trèhmerna (east-west, north-south and the top and bottom), as well as the surface of the two-dimensional. Easy to understand the apple connects two points on the two-dimensional surface, passing through the trèhmernyu core apple. Similarly, our with You easy to understand connects the London and California in our trèhmernoy universe, passing through the chetyrèhmernoë

hyperspace(May, nèm and not four measurements and more!), Is not part of our universe.

Our universe control laws of physics. It is they who dictate that can in the occur and that may not. Allow whether these laws exist and derive euclideanized equations Nord? Amazingly, but the answer is "Yes!"

Unfortunately, according to the same laws of most derive euclideanized equations Nord to collapse (because the collapse of the wall tunnels) so quickly that no one and nothing backpack pass through them unharmed. To avoid the plow dollars, you need to fill in the mole Nora special form of matter -

*Cloth With the The negative Density Energy, Such Energy
Create Force*

"Antigravity", which Mole Nora will remain open.

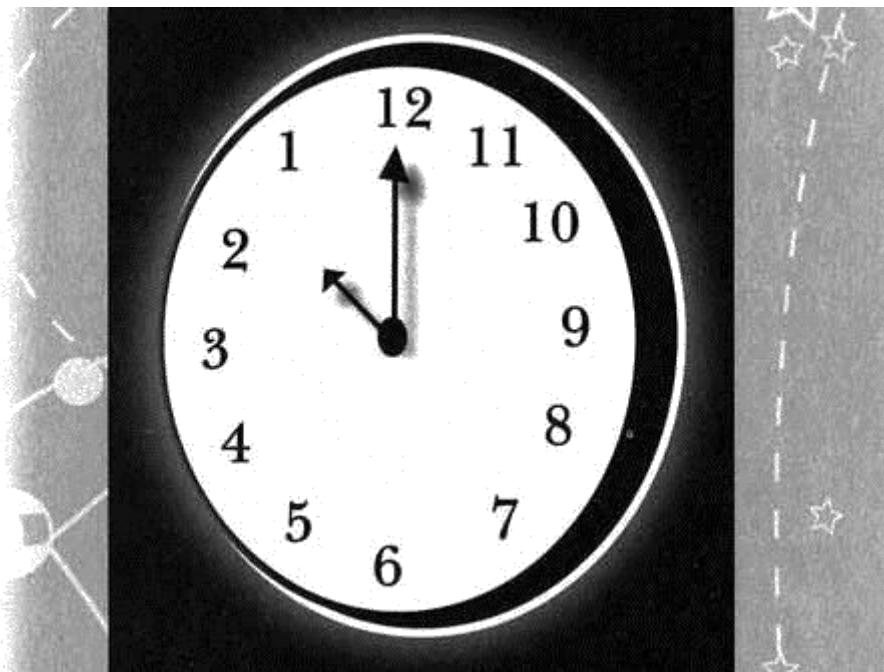
But is it possible to the existence of the matter with the negative energy density? It is ironic that the answer to this question again positive! This matter daily sozdaètsya in physical laboratories, but only in tiny quantities and in a very short time. It Sozdaètsya putèm borrowing energy from the areas of the space in which no energy is not - that is the borrowing energy from the so-called "vacuum". However, whenn't get into that of the vacuum must be very quickly give, if not borrowed very little. As we learned? Considering the laws of physics with mathematics.

For example, you - the genius engineer and want to hold mole Nora open so that it does not imploded. Whether it is possible to assemble in his burrow enough energy to the negative density and hold eè there so long to your friends wait too long to pass through the holes back? As far as I can judge my knowledge - no, impossible. But no one on the ground is not aware of this certainly is not yet knows. We until eschè not so clever to find out.

If the laws of physics is indeed allow you to hold the generalization of the open, whether or not such a occur in our Universe natural putèm? It is very likely that no. Likely to create such a burrow and keep them open can only be through labor engineers.

How far the modern engineers to this to learn? It is a very, very far. If the technology derive euclideanized equations Nord is possible, it is not excluded that the US to neè left to pass about as much as the Crimean astrophysical observatory people to space polètov. But for a highly developed civilization which shall stumble this technology, generalization of could be an excellent, the ideal way to mezhzvèzdnyh travel.

Imagine that you - the engineer and the representative of the "Advanced" civilization. You berète one of the inputs wormhole (the same, round similar to the crystal ball), put it in the spacecraft, the enormous speed send this ship to the universe and then exactly the same are returning it to the native planet. The laws of physics tell us that from the point of view of the observer on the outer boat this journey zaymèt several days and from the point of view of the observer on the planet - a few years. The result get strange: Entering the tonneleobraznuyu mole Nora through one entrance and exit through the other, you exit a few years earlier than the entered, that is you are in the past. The Mole Nora becomes a time machine.



And with such a machine could try to change history! Return to the past, meet with itself, only the younger and all exactly what this young to sit at home - because, when you are in the morning went to work, you downed a truck.

Stephen Hawking suggested that the laws of physics does not allow you to create a Time Machine and thereby protect the history of the changes. This hypothesis is called the "hypothesis on the protection of the history" (History - this is the sequence of events in the order in which they occurred). We do not know precisely, is correct if this hypothesis Stephen, but we have known the two ways in which the laws of physics really could prevent the creation of machine time and thereby protect the history.

First, according to these laws, even the most ingenious engineer would not have been able to accumulate a sufficient number of negative energy to Mole Nora remained open and allowed through the pass. Prichèm Stephen, applying the laws of physics, proved that any Time Machine would require the negative energy; this means that it is impossible to create not only a time machine, which has engaged the generalization of, but none.

Secondly, we with colleagues-physicists have shown that any Time Machine destroyed the - perhaps, putèm giant explosion - at the time as only the attempted to èè include. The laws of physics is quite clearly hinted at that the case would be it; but we do not eschè so well studied these laws and the resulting projections to approve this certainly.

So that the final withdrawal has not been made. We do not know exactly as to whether the laws of physics saturation civilizations create generalization of for mezhvèzdnyh voyage or machine time to travel in the past. To judge about this with confidence, a better understanding is needed of the laws of physics. Such a level of understanding of neither Stephen, neither I nor our colleagues have not yet reached.

I hope that this will be to you - a new generation of uchènyh.

M-theory: 11 measurements!

How to combine the classic common theory of relativity Einstein, describes the form of the universe and the gravitational interaction with the quantum theory to explain the other fundamental interactions and the behavior of elementary particles?

The most successful attempts to such kind associations include in the The **Additional Spatial measurement and supersymmetry.**

These additional measurements so tight svernut that large objects they are simply not notice!

Supersymmetry implies that the known particles are particles of superpartner: for example, photon - photino, quark - squark! Uchène hoped that the experiments on the Large Hadron Collider will detect these particles and can be, and additional measurements!

The theory of completely integrable classical (supersymmetric strings) replaces the particles (points) tiny playing solo (lines). Vibrating in different ways - as the game on guitar, - these strings as elementary particles of various kinds. And, as would be strange it may sound, strings can explain the evaporation losses!

B Ohio State University should exist in ten dimensions - means that six of them remain hidden. How is this happening? In this we are not eschè PAT to End.

In 1995 the American scientist Edward summed up the river on a boat tour or experience all of the various options for the theory of completely integrable classical, integrating them into a single - already eleven-- M-theory.

Uchène differ in the views that means the letter "M" in the title of the theory: "Magic", "mystical", "parent" or, may be, "membrane?" To determine this is to be the new generations of physicists.

Uchène very serèzno are M-theory, but until eschè do not know that it is a theory of the entire.

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Attention: The original was taken version of FB2.

Editing, decoration: Andrew D'Alembert (DARK STYLE) ||YA@DarkStyle.org