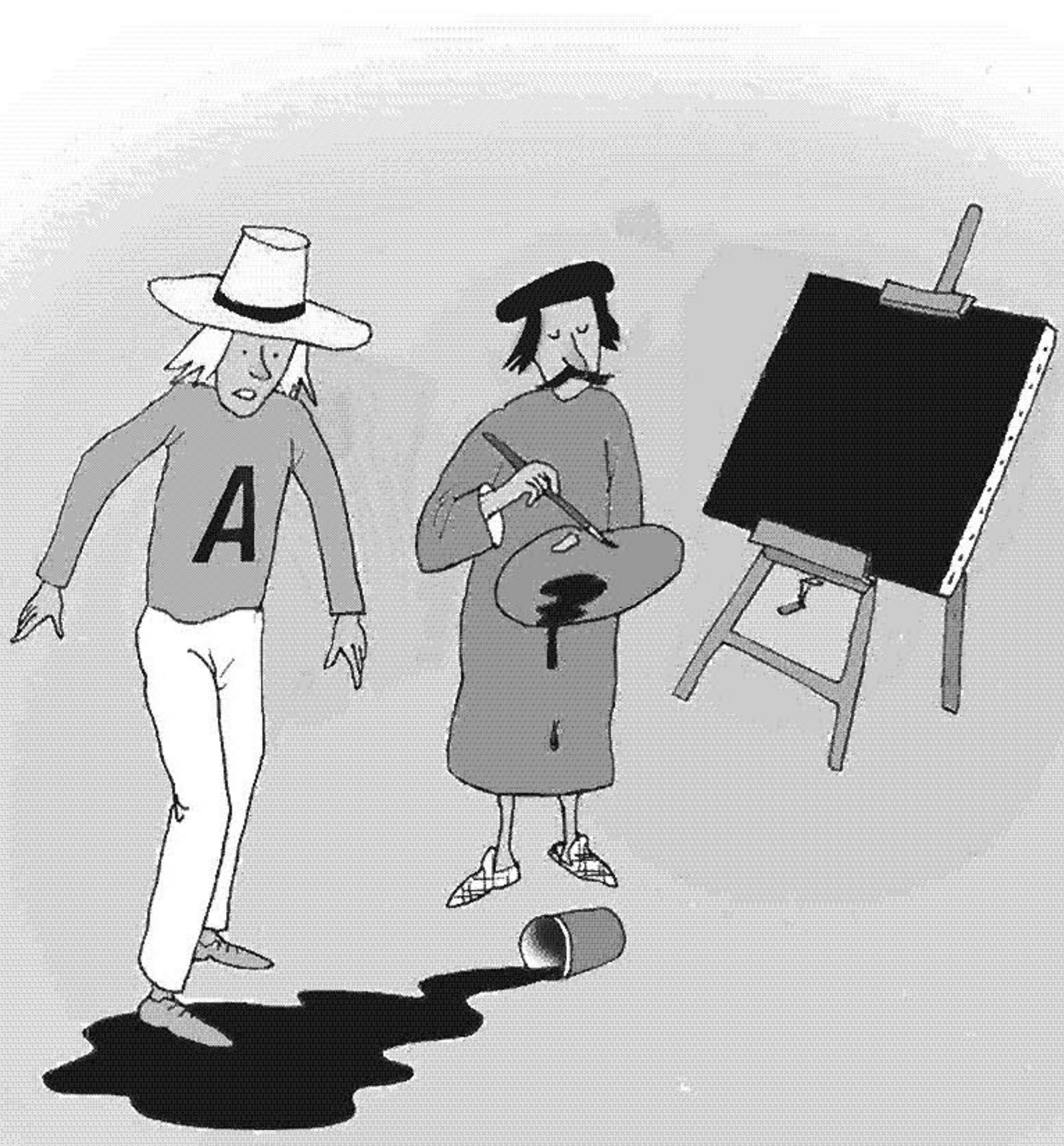
Jean-Pierre Petit

JANUS MODEL

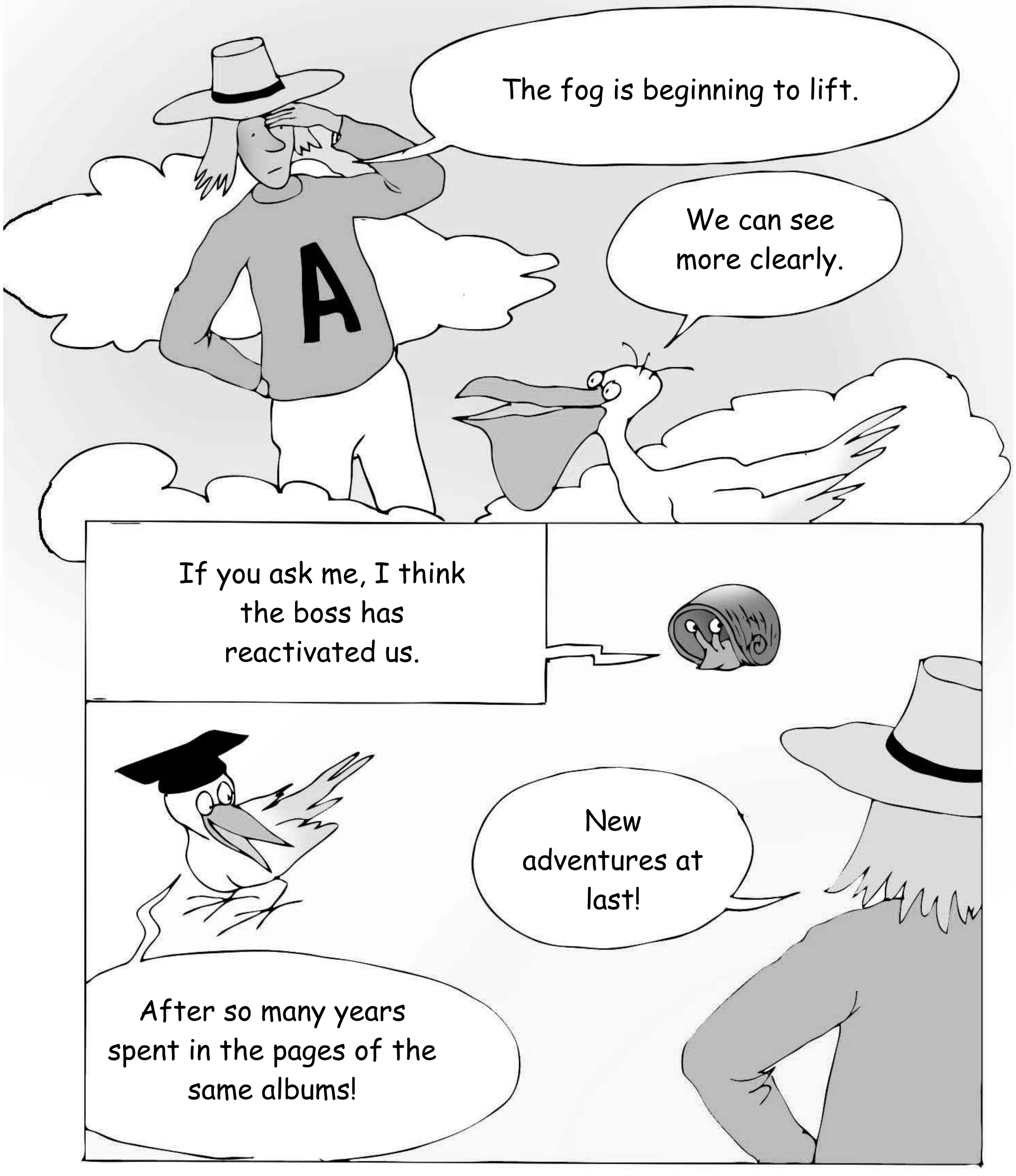
versus

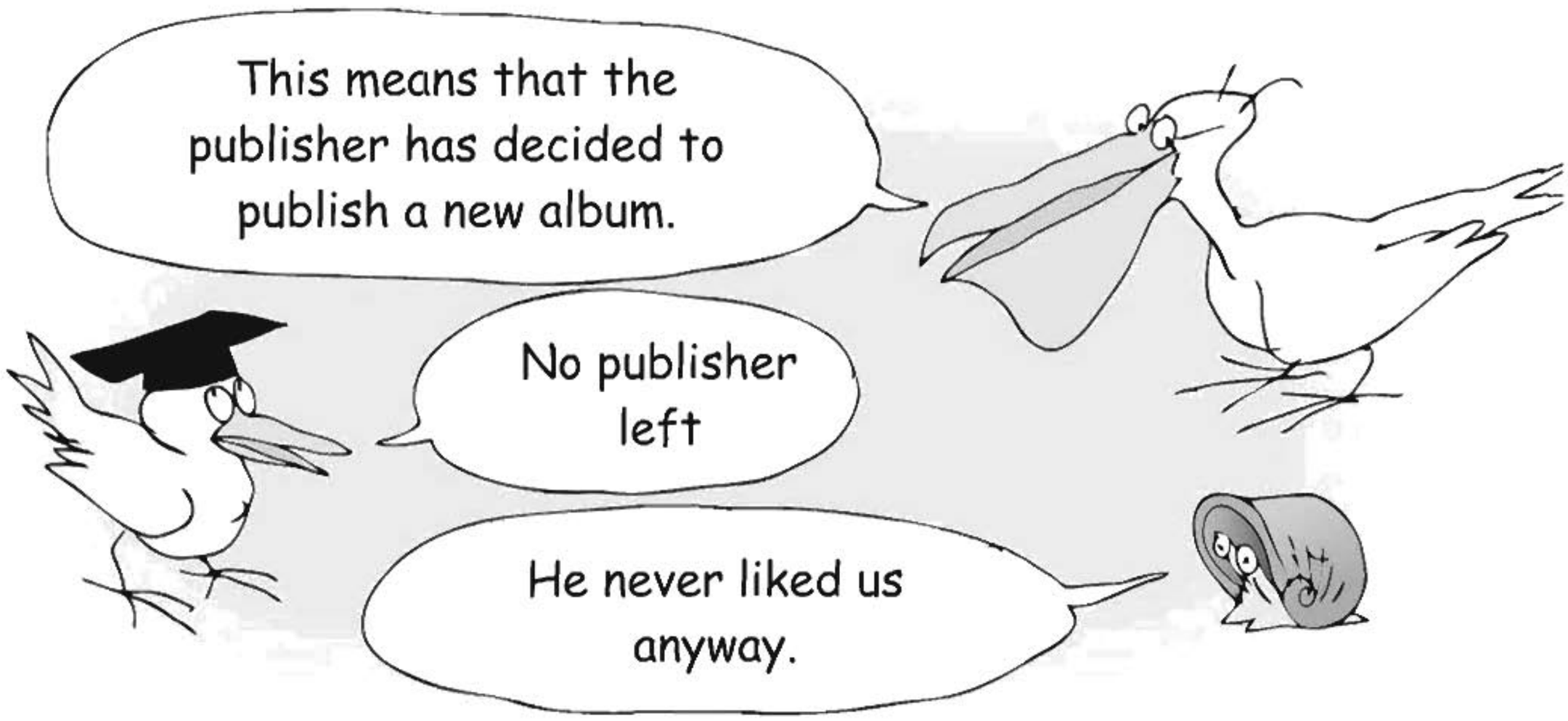
BLACK SCIENCE

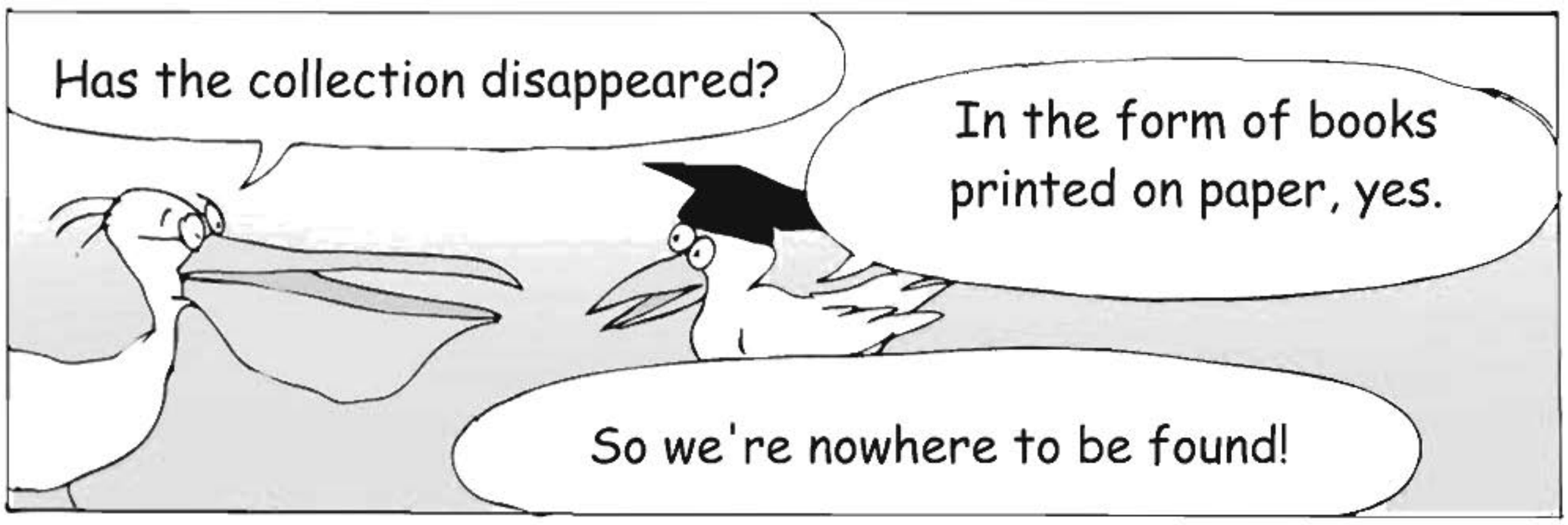


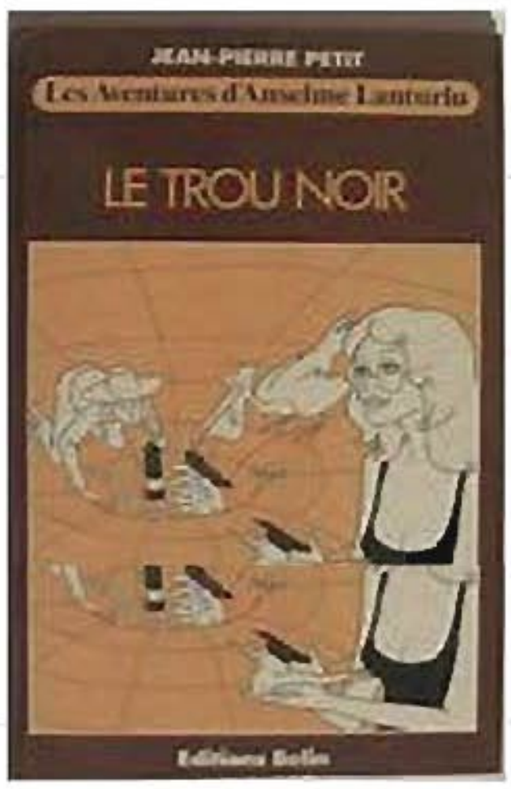
2023

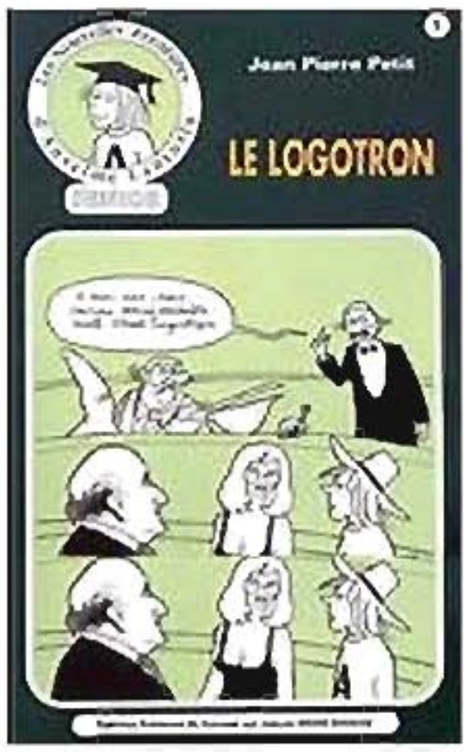
PROLOG

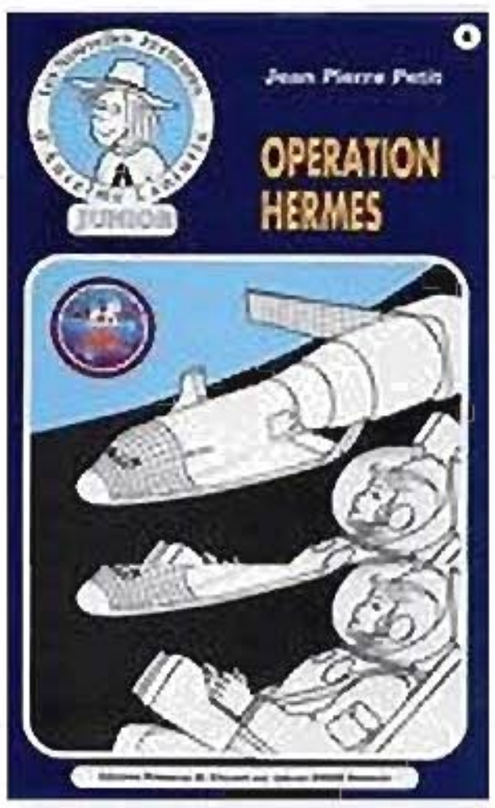

The fog is beginning to lift.
We can see more clearly.
A
If you ask me, I think the boss has reactivated us.
New adventures at last!
After so many years spent in the pages of the same albums!

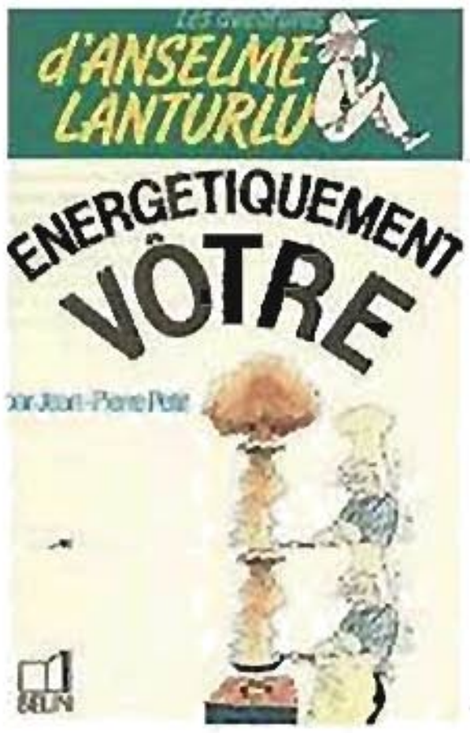

This means that the publisher has decided to publish a new album.
No publisher left
He never liked us anyway.


Has the collection disappeared?
In the form of books printed on paper, yes.
So we're nowhere to be found!

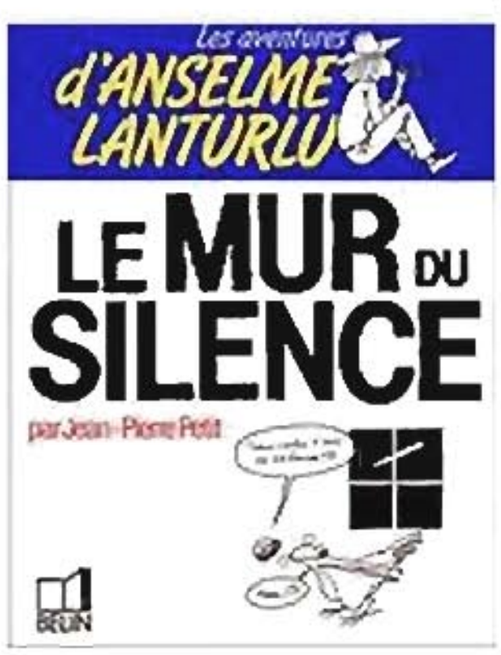

JEAN-PIERRE PETIT
Les Aventures d'Anselme Lanturlu
LE TROU NOIR
Editions Belin


Jean Pierre Petit
LE LOGOTRON

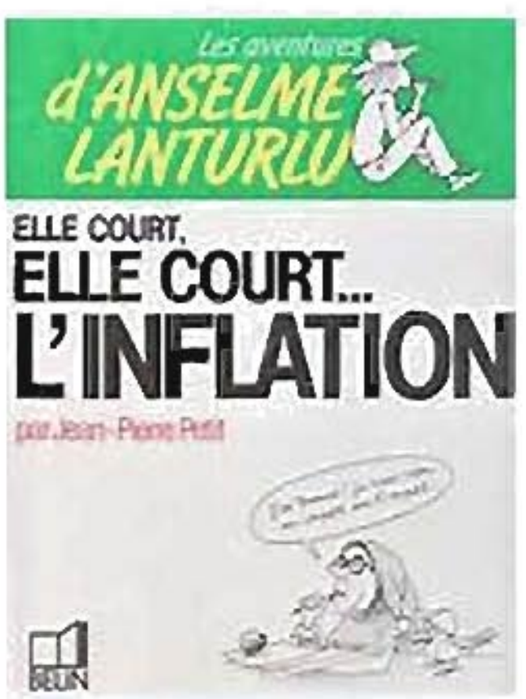

Jean Pierre Petit
OPERATION HERMES


Les aventures d'ANSELME LANTURLU
ENERGETIQUEMENT VÔTRE
par Jean-Pierre Petit
BELIN


Les aventures d'ANSELME LANTURLU
le TOPOLOGICON
par Jean-Pierre Petit
BELIN


Les aventures d'ANSELME LANTURLU
LE MUR DU SILENCE
par Jean-Pierre Petit
BELIN


Les aventures d'ANSELME LANTURLU
BIG BANG
par Jean-Pierre Petit
BELIN


Les aventures d'ANSELME LANTURLU
ELLE COURT, ELLE COURT...
L'INFLATION
par Jean-Pierre Petit
BELIN

On the contrary, it has millions of readers in every country, and we've been translated into forty languages.

What about the boss?

As active as ever. He says only that he's been too busy with his work to produce new albums.

And Sophie!?

She says she's on her way.

So, what's the theme now?

Let's have a look...


Come in, come in, come and see Science live. In a few minutes, the first images from the James Webb Space Telescope.
B
They put a telescope into space!?
As I understand it, this isn't the first. In 1990, there was already the Hubble Space Telescope.
We'll have to get up to speed.
What's that weird thing underneath?

After an absence of several decades, your knowledge needs a serious dusting!

A lot has been discovered since then.

What, for example?

During the first 10^{-33} seconds, the universe underwent an expansion of 10^{30}, due to particles called INFLATONS.

What are INFLATONS?

Well, it's these particles that create this inflationary field, responsible for the fantastic primordial expansion that the Universe is undergoing.

Ah well...

You're going to have to take back a lot of your comics, like A THOUSAND MILLION SUNS, which contain a lot of things that aren't true.

You mean, it's no longer GRAVITATIONAL INSTABILITY that creates galaxies?

Yes, but the role of normal visible matter is practically nil: BLACK MATTER governs all the mechanisms at work in galaxies.

It means you've discovered a new kind of matter, and that's very interesting. What's it made of?

We don't know exactly, but we're looking. There are various candidates.

How can we talk about things we know nothing about?

We have a number of people who do this very well now; just use the conditional and say 'if this... if that...'

The conditional sells very well. It's the froth of things, so to speak. Harvey Kiss, here's my card.

What does he always carry with him?

This is the key to his success: a shoe-shine kit. He represents a major popularization magazine.

Science is just another kitchen.

As a complement, we have artist's images.

A

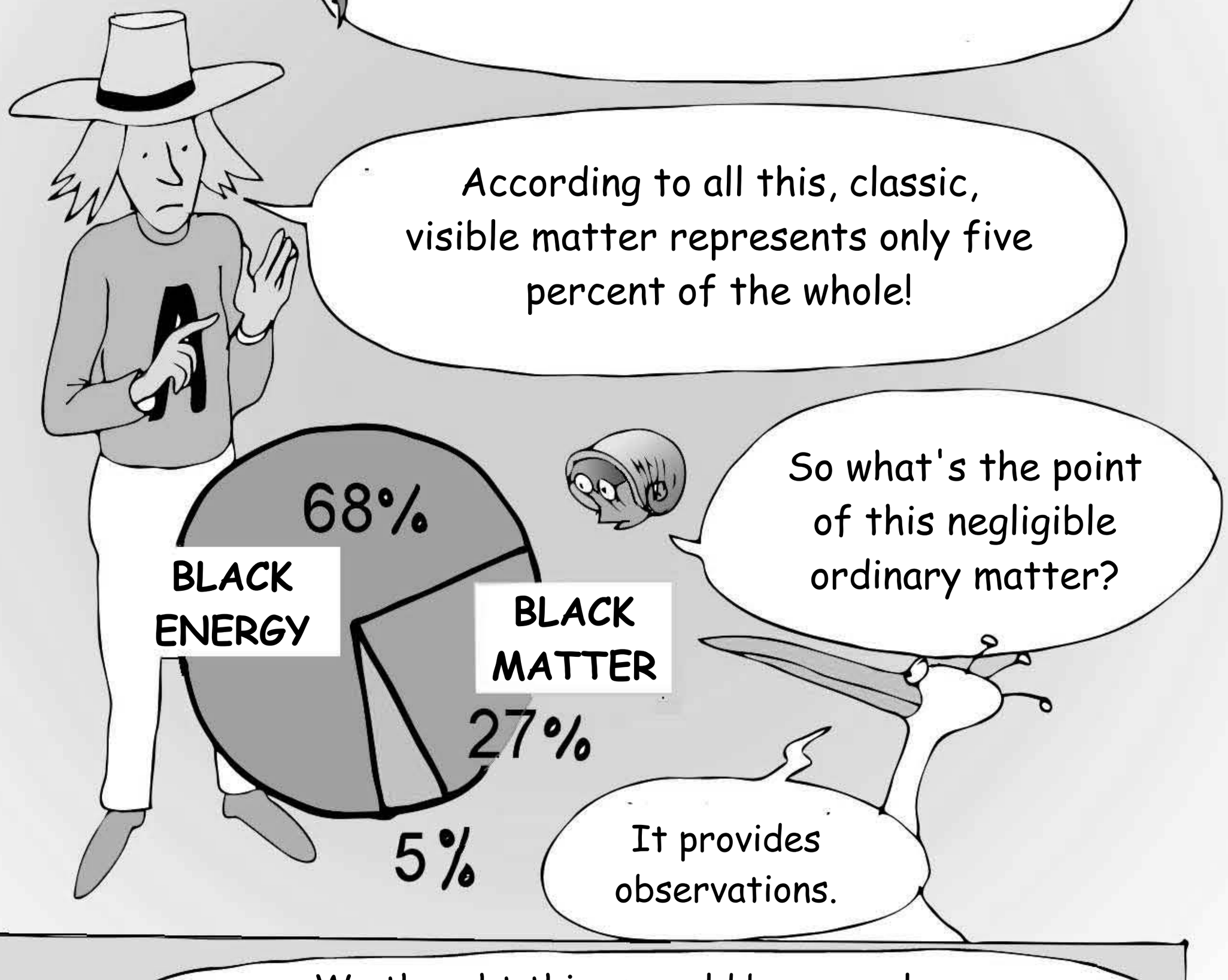
It's all right! It's good luck.

BIG BANG and COSMIC STORY also need to be revisited, as they fail to capture this fantastic discovery of the acceleration of cosmic expansion.

Which is due to what?

What causes the ACCELERATION of COSMIC EXPANSION is BLACK ENERGY. Converted into matter equivalents according to $E = mc^2$, it represents 68% of the content of the Cosmos, while BLACK MATTER represents only 27%.

According to all this, classic, visible matter represents only five percent of the whole!

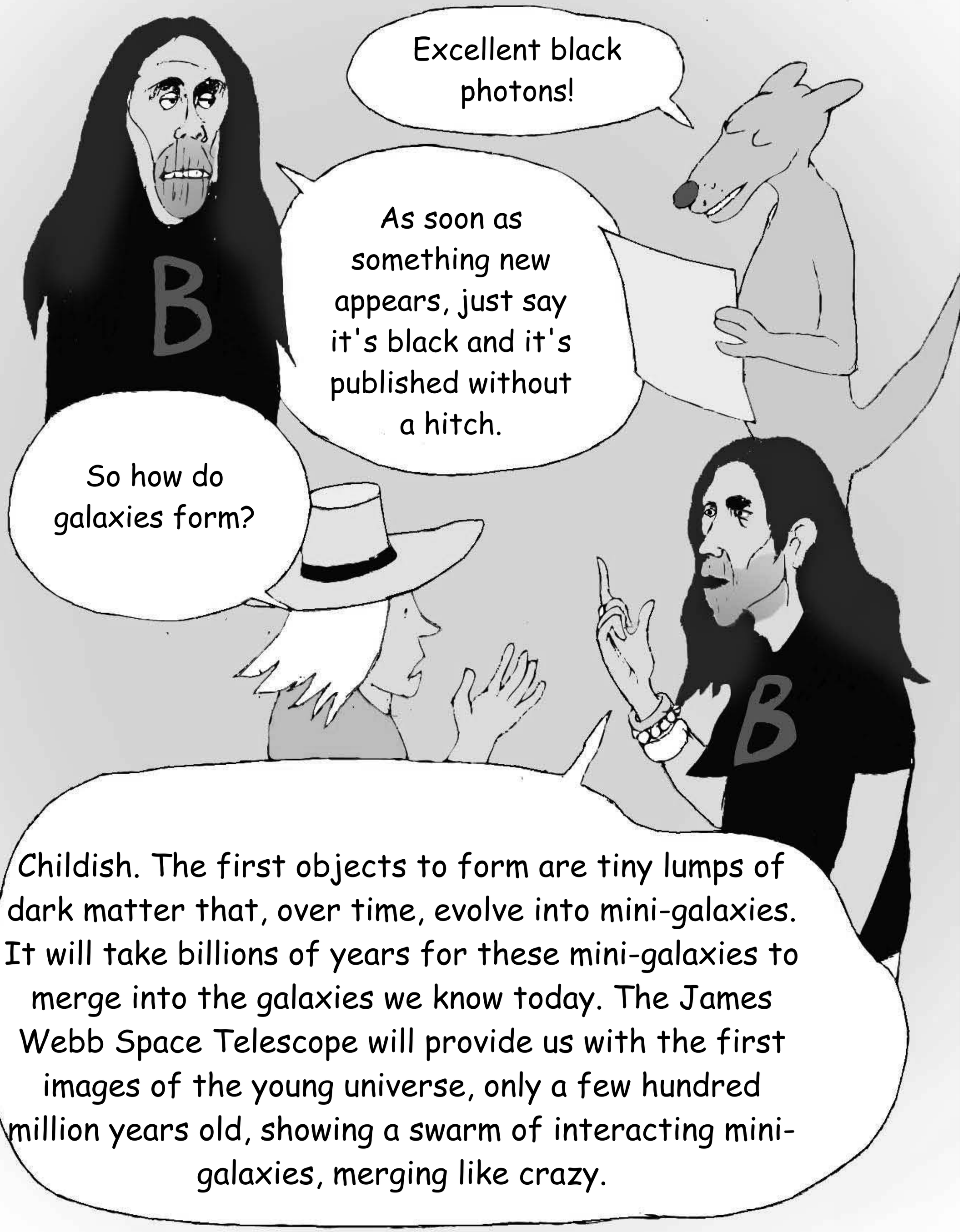


So what's the point of this negligible ordinary matter?

It provides observations.

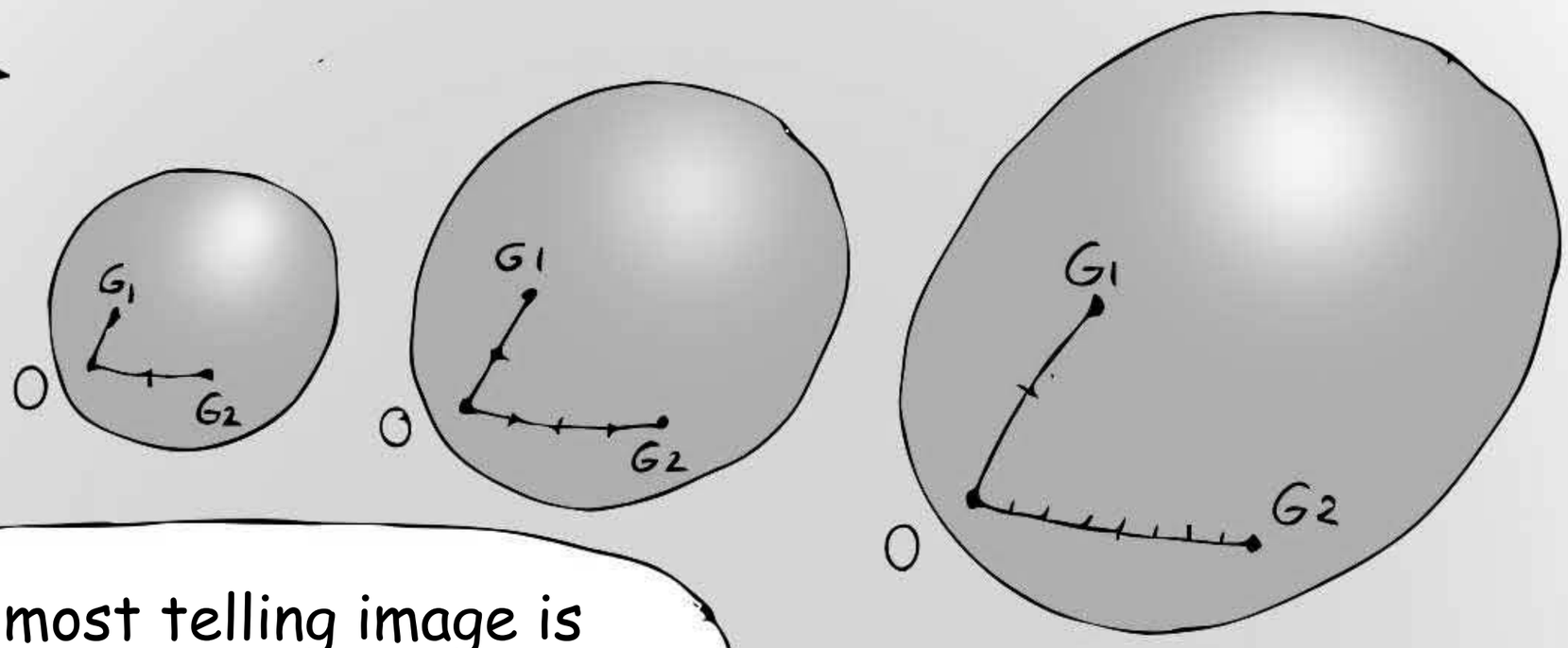
We thought things would become clearer with time. But all these explanations are quite obscure.

BLACK SCIENCE



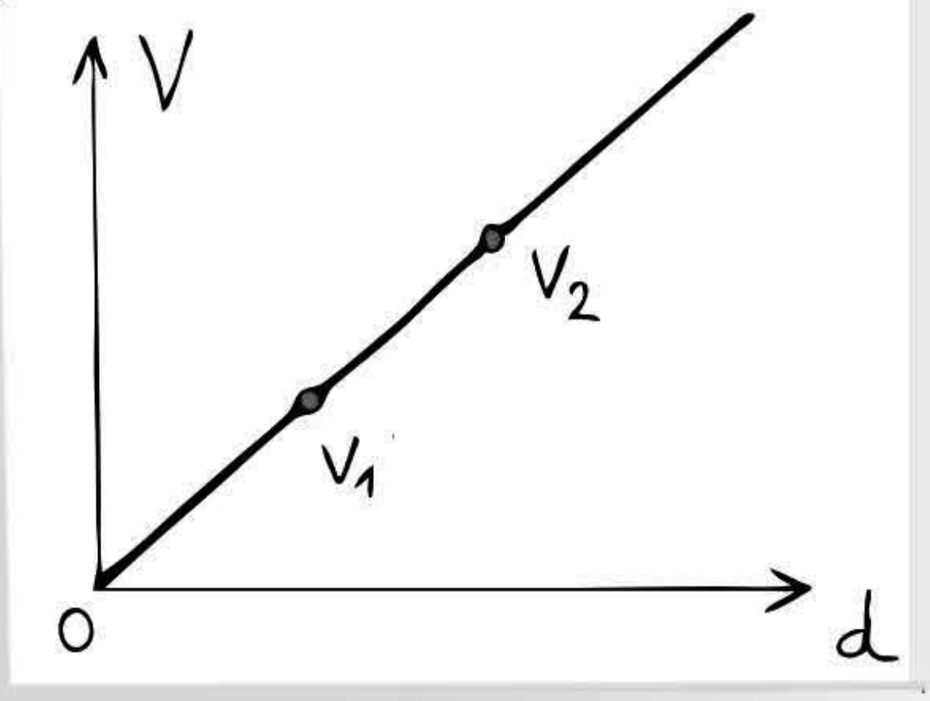
Why JWST?

The universe is expanding. In 1929, Edwin Hubble demonstrated the runaway motion of galaxies.



The most telling image is that of an inflated balloon.

On the balloon, from an observer's point of view, the distance to galaxy G2 is double the distance to galaxy G1. In an interval of time, distance OG2 becomes 4, while distance OG1 becomes 2. This means that the speed at which G2 moves away will be twice that of G1.
Direction.



More generally, the escape velocity is proportional to the distance of the galaxy object: this is HUBBLE'S LAW.

THE DOPPLER EFFECT

The classic example is the pitch of the note emitted by a train, higher as it approaches and lower as it moves away.

pendulum

V

V

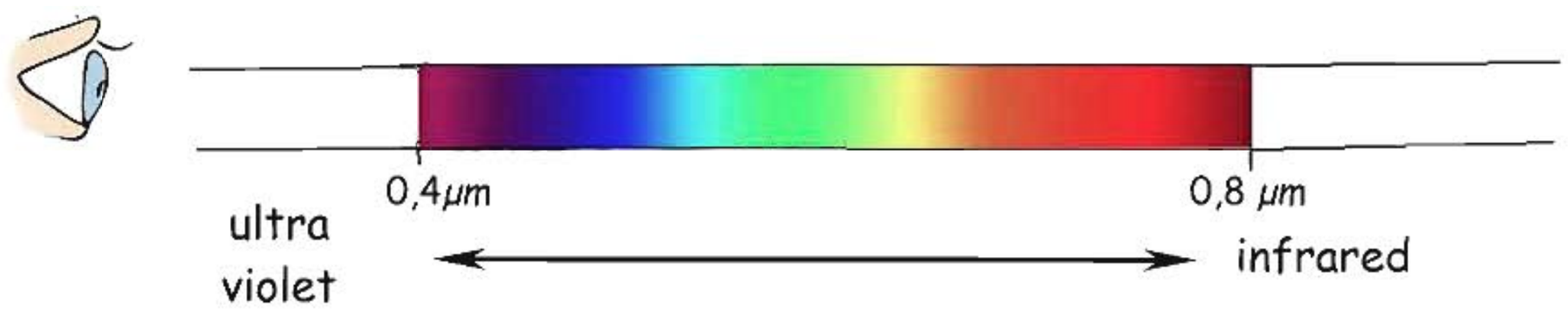
Both coils receive the signal at speed c > V

c

c

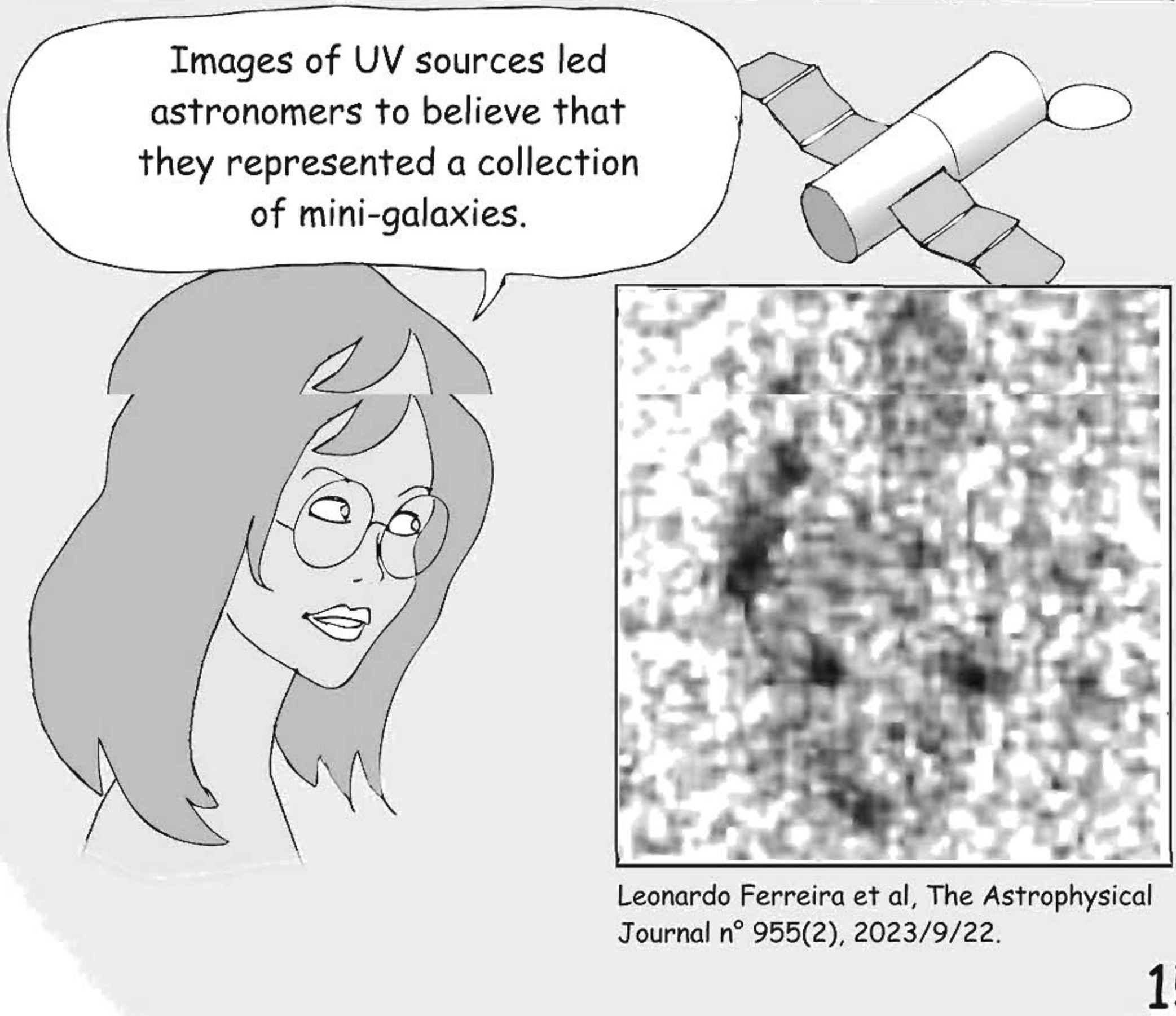
If the carriage approaches, the sinusoid is compressed: the wavelength is shorter. If it moves away, it is stretched: the wavelength is longer.

The human eye does not perceive light wavelengths longer than 0.8 microns.



The Hubble Space Telescope was equipped with infrared-sensitive instruments down to a wavelength of 1.7 microns, enabling it to obtain images of galaxies 2 billion light-years away in the visible-light range. This distance could be extended to 8 billion light-years if the infrared images corresponded to UV sources emitted by groups of young stars.

Direction

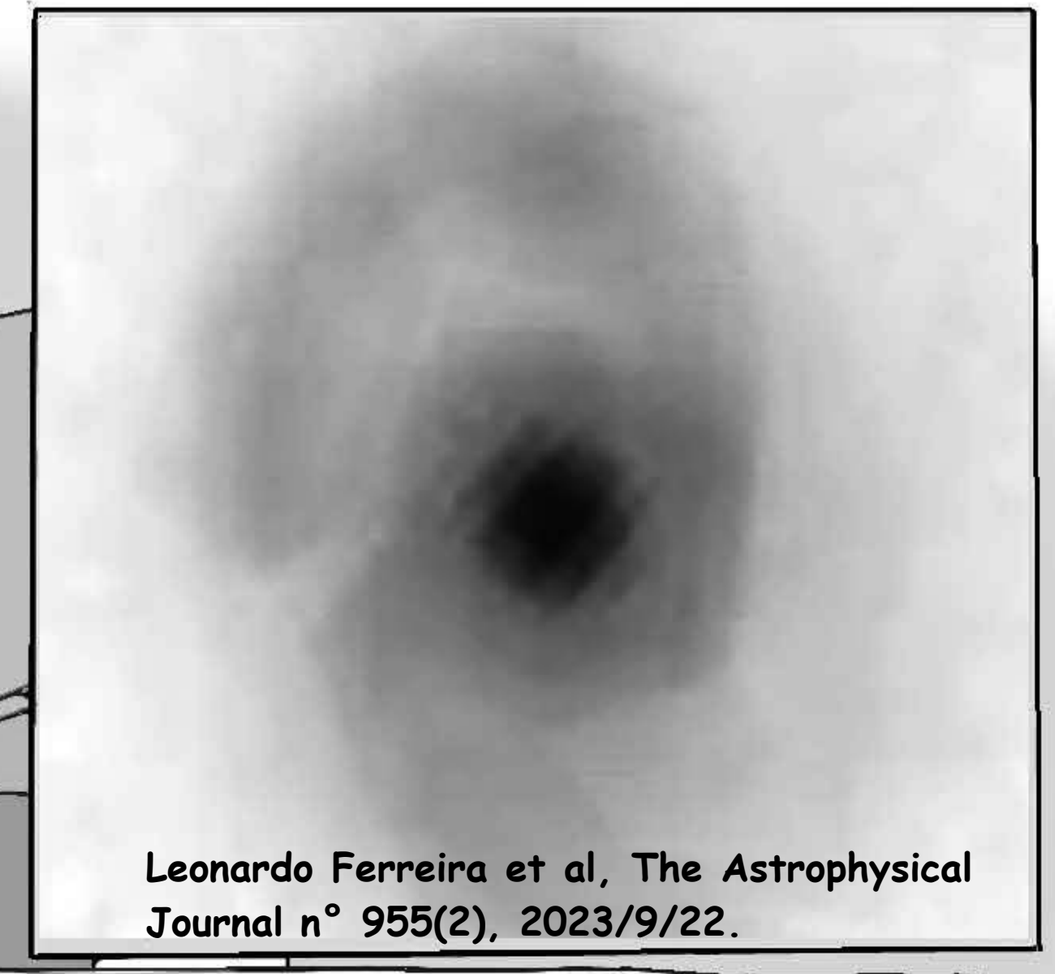


Leonardo Ferreira et al, The Astrophysical Journal n° 955(2), 2023/9/22.

Professor, we receive the first images from the James Webb Space Telescope

Well, let's find out...

But this is the image of a fully-formed spiral galaxy, with a mass greater than that of our galaxy. You've got the wrong file.



Leonardo Ferreira et al, The Astrophysical Journal n° 955(2), 2023/9/22.

No, it's the same image taken by Hubble, but extended to the visible spectrum. What we had taken to be a swarm of interacting mini-galaxies were in fact the UV sources of groups of stars belonging to a single spiral galaxy!

This snapshot shows the state of the Universe when it was only 500 million years old. No galaxy can form that quickly. Yet this one already contains relatively old stars. There is no model that could produce this.

That's not what the simulations showed at all. We had a large number of mini-galaxies merging at a high rate.

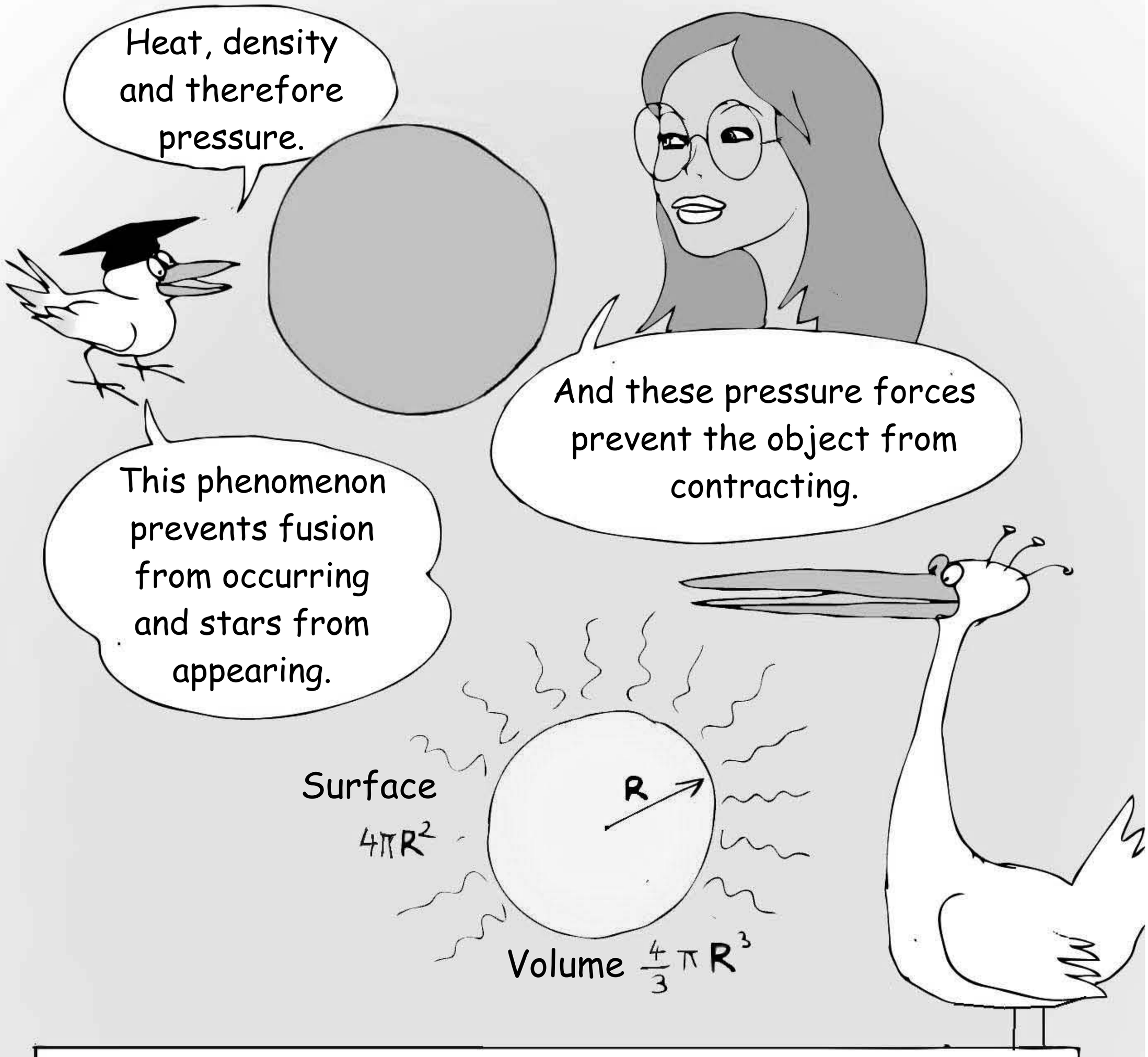
I have a feeling that our BLACK SCIENCE champions are in trouble.

When objects form, this means that GRAVITATIONAL INSTABILITY(*) causes masses m to rush towards each other, acquiring velocity V and therefore KINETIC ENERGY:

$$\frac{1}{2} m \boldsymbol{V}^2$$

And this gravitational energy will be transformed into HEAT.

(*) See the comic strip A THOUSAND MILLION SUNS



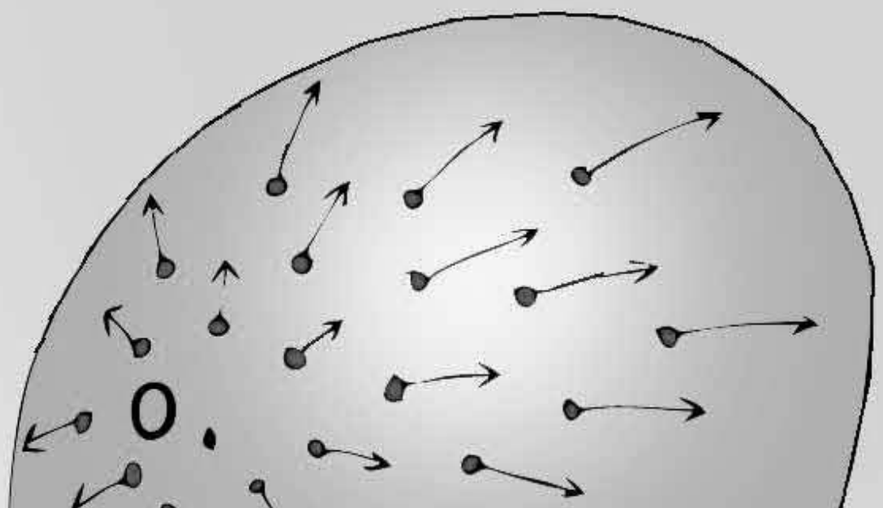
The only way for these objects to dissipate this heat is to emit infrared, or thermal, radiation from their surface. The larger the object, the more energy it needs to evacuate, which increases with volume, i.e. with the cube of the object's radius R. But the surface area of the "radiator" increases with the square of this radius. But the surface area of the "radiator" grows as the square of this radius. Smaller objects therefore move faster than larger ones.

Direction

This is why, whatever the parameters we give to BLACK MATTER, of POSITIVE MASS, we'll never be able to produce a model that accounts for the complete formation of galaxies for billions of years.

But the heroes of this BLACK SCIENCE have already experienced serious setbacks of a different kind in 2017!

THE DIPOLE REPELLER



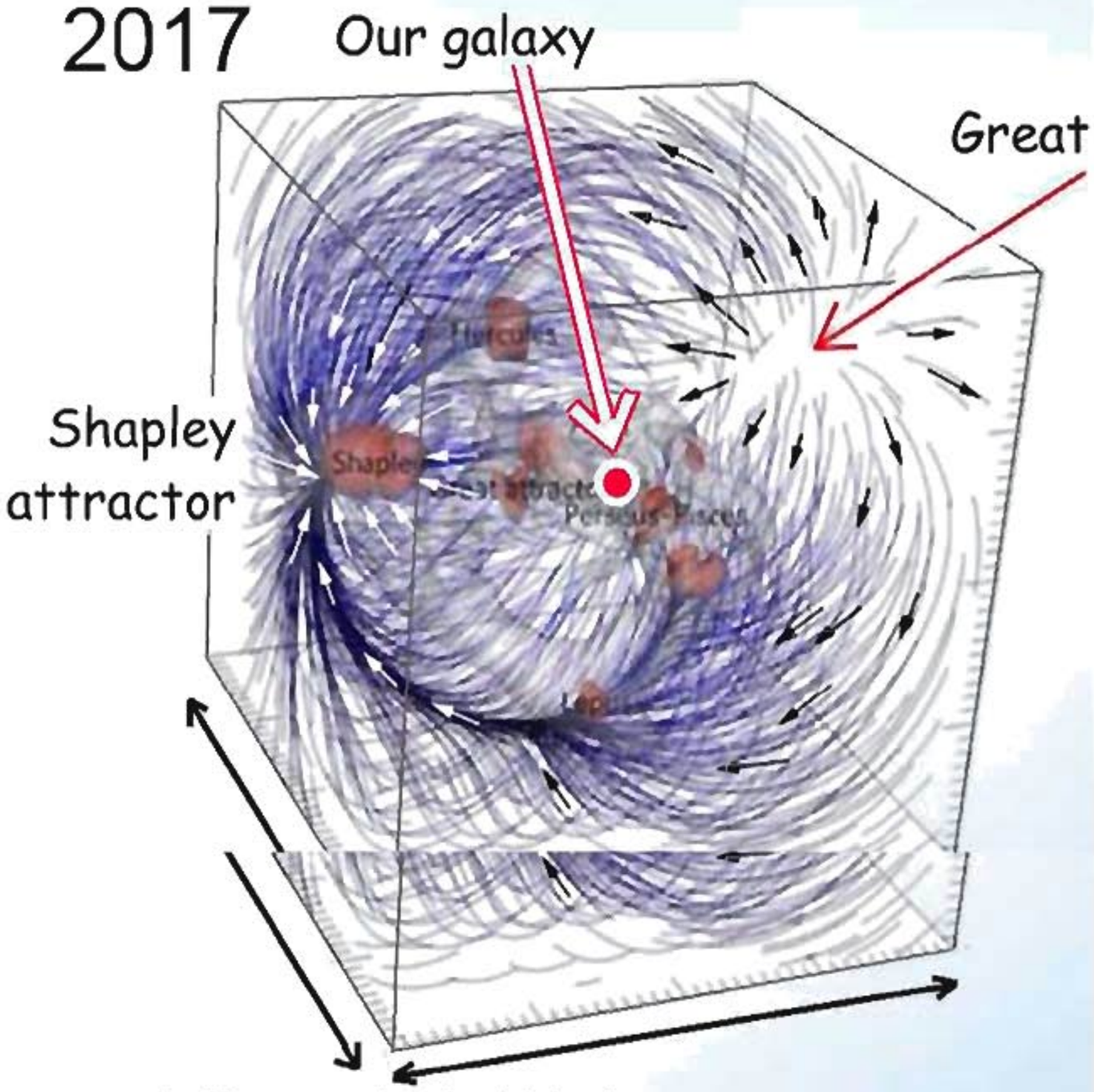
An immobile observer sees the galaxies fleeing from him with a speed proportional to their distance, if these galaxies, also immobile in space, are like confetti stuck on the balloon.

Four researchers (*) came up with the idea of subtracting from galaxy velocity measurement data what was due to cosmic expansion, to obtain the galaxies' OWN SPEEDS.

The way the confetti moves on the balloon skin.

And they obtained the following velocity field:

2017



Astonishing...

The Milky Way is at the center of the cube, whose side measures one and a half billion light-years.

(*) France's Hélène Courtois, Daniel Pomarède, Israel's Yeudi Hofmanet and Canada's Brent Tully. (Nature 2017)

The Great Repeller

600 million light-years from the Milky Way, we find an immense void that repels everything around it. In this void, there are no galaxies, no matter.

?

Official explanation: NIL. There hasn't even been an article published on the subject. If you don't know what to say, just ignore it.

Some specialists believe this is due to the repulsive effect of a gap in the dark matter.

Nonsense! GRAVITATIONAL INSTABILITY produces CONDENSATIONS, but not VOIDS!

It was just a suggestion.

NOTHING IS GOING WELL IN PHYSICS!(*)

(*) This was the title of the American Lee Smolin best seller - 2006

To justify the homogeneity of the early universe, we assume that it is made up of INFLATONS, particles of which there is NO THEORETICAL MODEL.

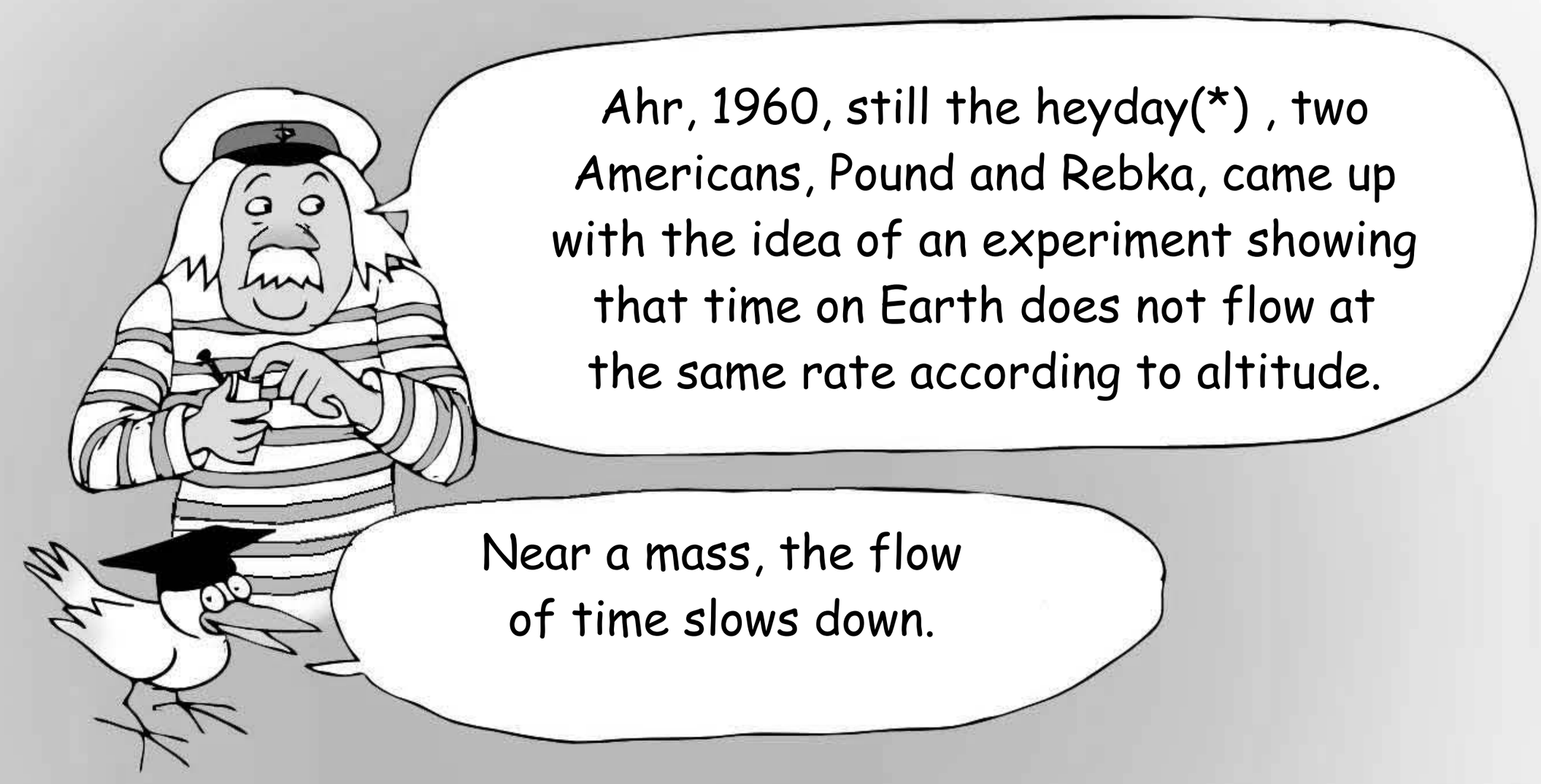
We discover that the expansion of the Universe is accelerating. No problem: BLACK ENERGY explains it all! A new, major component for which there is NO THEORETICAL MODEL

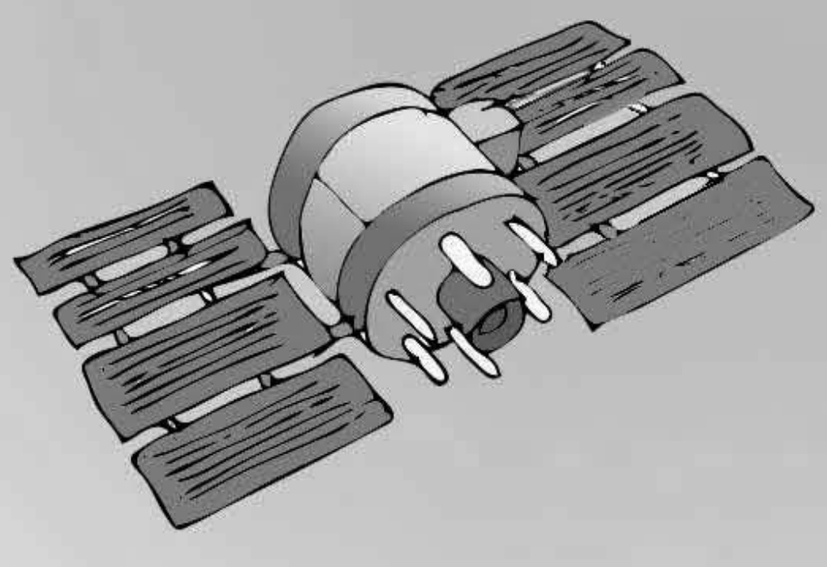
Between 1900 and 1970, particle physics experienced a golden age, with matter taking on a variety of forms. Everywhere, experiment confirms theory (e.g. Dirac's prediction of the existence of antimatter). And suddenly nothing works. None of the "super-particles" associated with photon, neutron, electron, neutrino, predicted by SUPERSYMETRY, manifest themselves in gas pedals designed to make them appear.

Management

In short, whether we're talking about the infinitely large or the infinitely small, it's a complete shambles.

THE FANTASTIC PROGRESS OF TECHNOLOGY

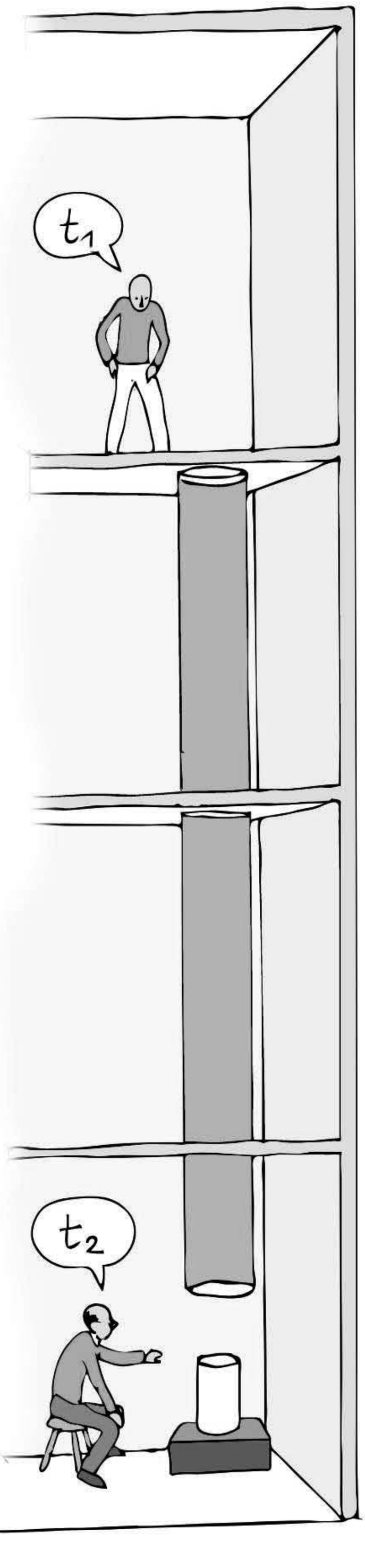




The GPS system uses some thirty satellites located at an altitude of 20,000 km, equipped with a high-precision atomic clock.

Time moves faster here than on the Earth's surface. Without this correction, the GPS system would be unusable.

(*) Einstein died in 1955



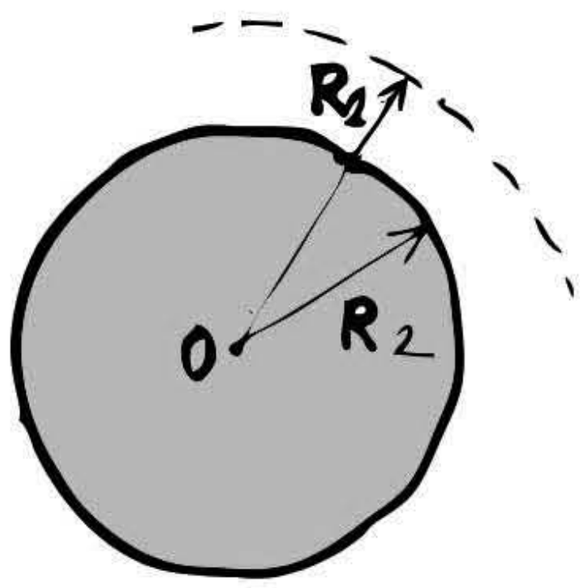
In 1960, the Americans Pound and Rebka devised a simple yet ingenious set-up to compare the gamma-ray emission frequencies of two sources made of the iron isotope 57Fe, with an extra neutron. The height difference is 22 metres. They used the formula established in 1916 by the German Karl Schwarzschild (*)

$$\frac{t_2}{t_1}=\sqrt{\frac{1-\frac{2GM}{R_2c^2}}{1-\frac{2GM}{R_1c^2}}}>1$$

deduced from the first exact solution he constructed to the equation with which Albert Einstein founded the science of mathematics in 1915.

general relationship

$$R_{\mu\nu}-\frac{1}{2}R\,g_{\mu\nu}=\chi\,T_{\mu\nu}$$



$G=6{,}67\times10^{-11}\,\mathrm{N\,m^2\,kg^{-2}}$
gravitational constant

$c=3\times10^{8}\,\mathrm{m/s}$
speed of light

$M=6\times10^{24}\,\mathrm{kg}$
Earth's mass

(*) January 1916

GRAVITATIONAL REDSHIFT

WAVE LENGTH is :

$$\lambda = c\,t$$

if observer "1" is very far away, then the formula tends towards :

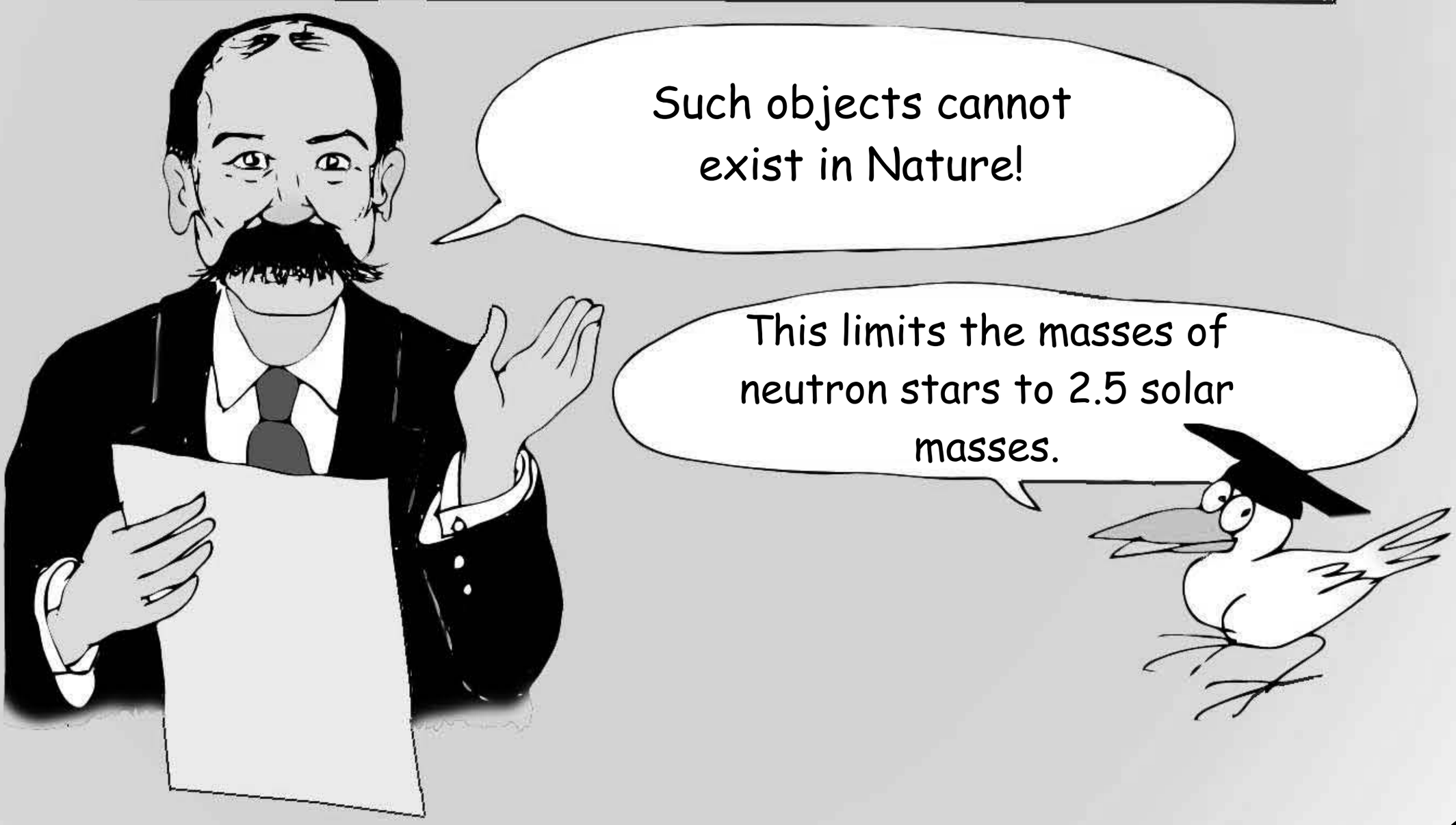
$$\frac{\lambda_2}{\lambda_1} = \frac{1}{\sqrt{1-\frac{2GM}{Rc^2}}} > 1$$

R being the radius of a star emitting light from its surface, this light will be perceived with a longer wavelength (lambda 2) by a distant observer.

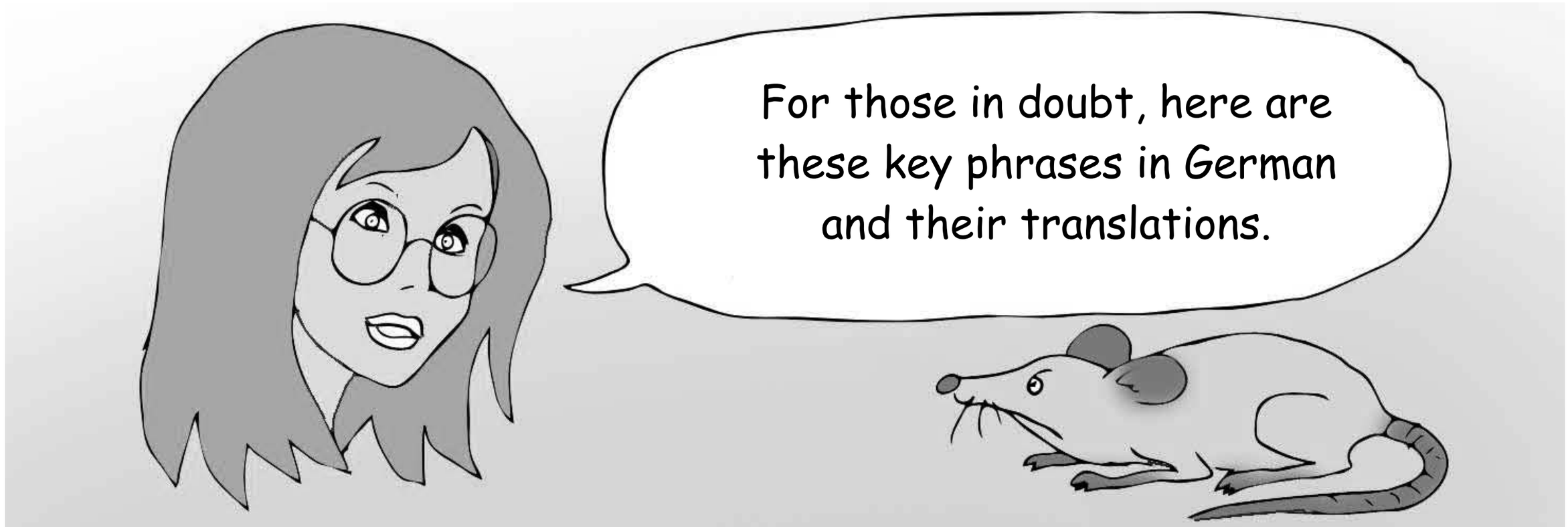
A month later: in February 1916, just before his death(*), my friend Karl published a second article, which was not translated from German until 1999, and has remained unknown to most cosmologists to this day.

He shows that there is a maximum value for the mass of a star, beyond which, at its center, the pressure (which is a density of energy per unit volume) and the speed of light become infinite.

K. Schwarzschild : Über das Gravitationsfeld Messenpunktes nach der Einsteinschen Theorie. Sit. Deut. Akad. Wiss. 1916



(*) He died of an infection on the Russian front in 1916.



z. B. bei konstanter Masse und zunehmender Dichte der Übergang zu kleinerem Radius unter Energieabgabe (Verminderung der Temperatur durch Ausstrahlung) erfolgt.

4. Die Lichtgeschwindigkeit in unserer Kugel wird:

$$v = \frac{2}{3\cos\chi_a - \cos\chi}, \qquad (44)$$

sie wächst also vom Betrag $\frac{1}{\cos\chi_a}$ an der Oberfläche bis zum Betrag $\frac{2}{3\cos\chi_a - 1}$ im Mittelpunkt. Die Druckgröße $\rho_0 + p$ wächst nach (10) und (30) proportional der Lichtgeschwindigkeit.

Im Kugelmittelpunkt ($\chi = 0$) werden Lichtgeschwindigkeit und Druck unendlich. sobald $\cos\chi_a = 1/3$, die Fallgeschwindigkeit gleich $\sqrt{8/9}$ der (natürlich gemessenen) Lichtgeschwindigkeit geworden ist.

4. The speed of light in our sphere is :

$$v = \frac{2}{3\cos(\chi_a) - \cos(\chi)} \qquad (44)$$

so that it varies from the value on the surface $\frac{1}{\cos\chi_a}$

to the value in the center $\frac{2}{3\cos(\chi_a) - 1}$

The pressure variable rho o + p increases according to (10) and (30) in proportion to the speed of light.

At the center of the sphere (x = 0), the speed of light and pressure become infinite.

But there are several situations in which much larger quantities of matter tend to concentrate into a single object: for example, the implosion of the iron core of a massive star with a mass well in excess of 2.5 solar masses.

Particles with mass m can only exist if they have sufficient space to accommodate their wave function, whose characteristic length is the Compton length:

$$\lambda_c = \frac{h}{mc}$$

So electrons, which are 1836 times lighter than protons and neutrons, will be the first to disappear.

By combining with protons to form neutrons.

If the pressure forces in the neutron fluid balance the force of gravity, the contraction stops and we get a NEUTRON STAR.

Otherwise, as nothing can stand in the way of this movement, the star implodes on itself in a matter of days, producing a SINGULARITY.

But what happens when, as Schwarzschild showed in his second article, the pressure and speed of light become infinite at the center of the star?

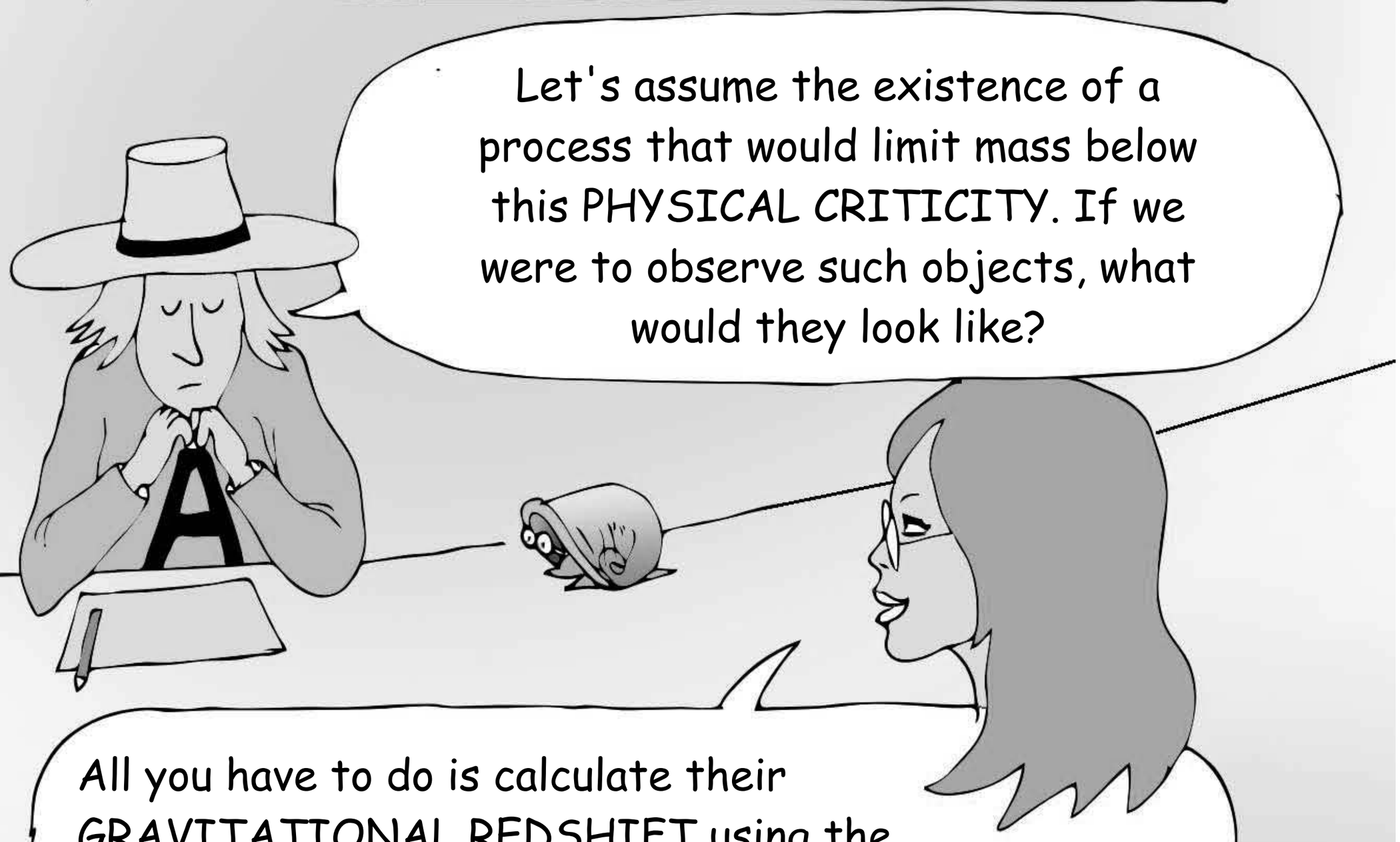
What a second article!?!

When neutrons are too tightly packed to accommodate their wavelength :

$$\lambda_n = \frac{h}{m_n c}$$

In the 1950s, those who opted for this scenario of unlimited implosion were unaware of the existence of this second article. Today, it would be so difficult to turn back the clock that their successors prefer to ignore the phenomenon.

Management



All you have to do is calculate their GRAVITATIONAL REDSHIFT using the formula : $\frac{\lambda'}{\lambda} = \frac{1}{\sqrt{1-\frac{2GM}{Rc^2}}}$ with $M = \frac{4}{3}\pi R^3 \rho$

$R = \sqrt{\frac{c^2}{3\pi G \rho}}$ is the radius of these objects,

you combine it all:

$$\frac{\lambda'}{\lambda} = \frac{1}{\sqrt{1-\frac{8\pi G\rho}{3c^2}\frac{c^2}{3\pi G\rho}}} = \frac{1}{\sqrt{1-\frac{8}{9}}} = \mathbf{3}$$

Mysterious QUASARS

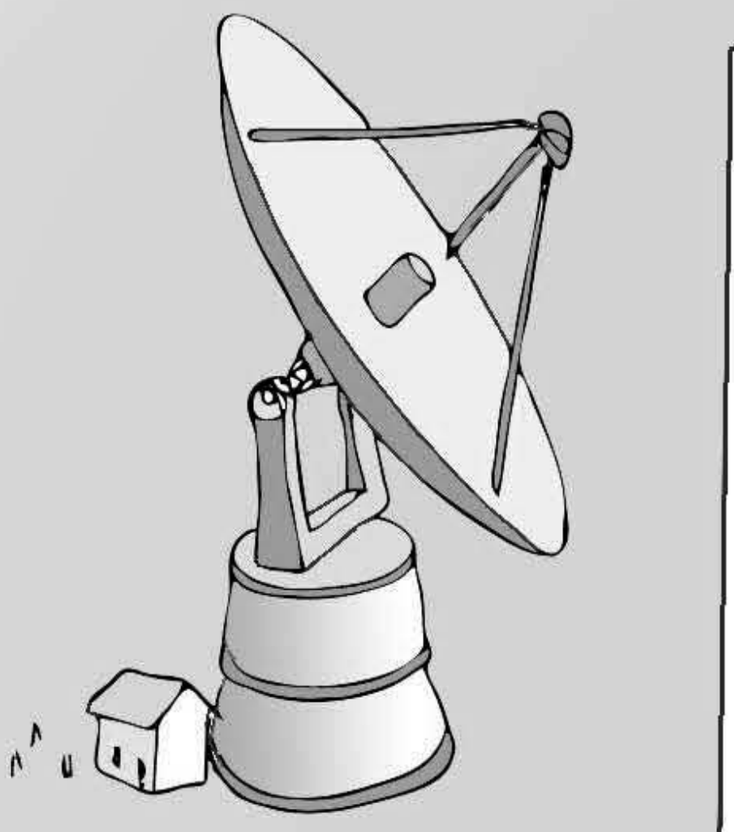
Periodically, mysterious, massive objects at the center of galaxies come to life, emitting powerful jets of plasma, usually diametrically opposed. When the phenomenon ceases, the galaxies have an extinct quasar at their center. The origin of such objects remains a complete mystery, as does the cause of these violent eruptions. One of the jets, directed towards the observer, is blue-shifted by the Doppler effect. The other, shifted in the infrared, does not appear in this image taken in the visible spectrum. The irregularities in the jet show that these emissions, focused by the strong magnetic field, occur only sporadically. To this day, the nature of this quasar phenomenon remains a complete mystery.

(*) It varies as the inverse of the wavelength.

A major discovery in recent years has been the presence, at the center of galaxies, of hypermassive objects whose mass has been determined with certainty by measuring the speed of the stars orbiting them, whose nature and origin are unknown.

Some brilliant discoveries! Galaxies are spinning too fast, and the expansion of the Universe is accelerating. There are objects representing billions of solar masses within galaxies, and we don't know why! Thanks to advances in technology, you're moving deeper into ignorance, but with the utmost precision.

The one at the center of our own galaxy represents four million solar masses.

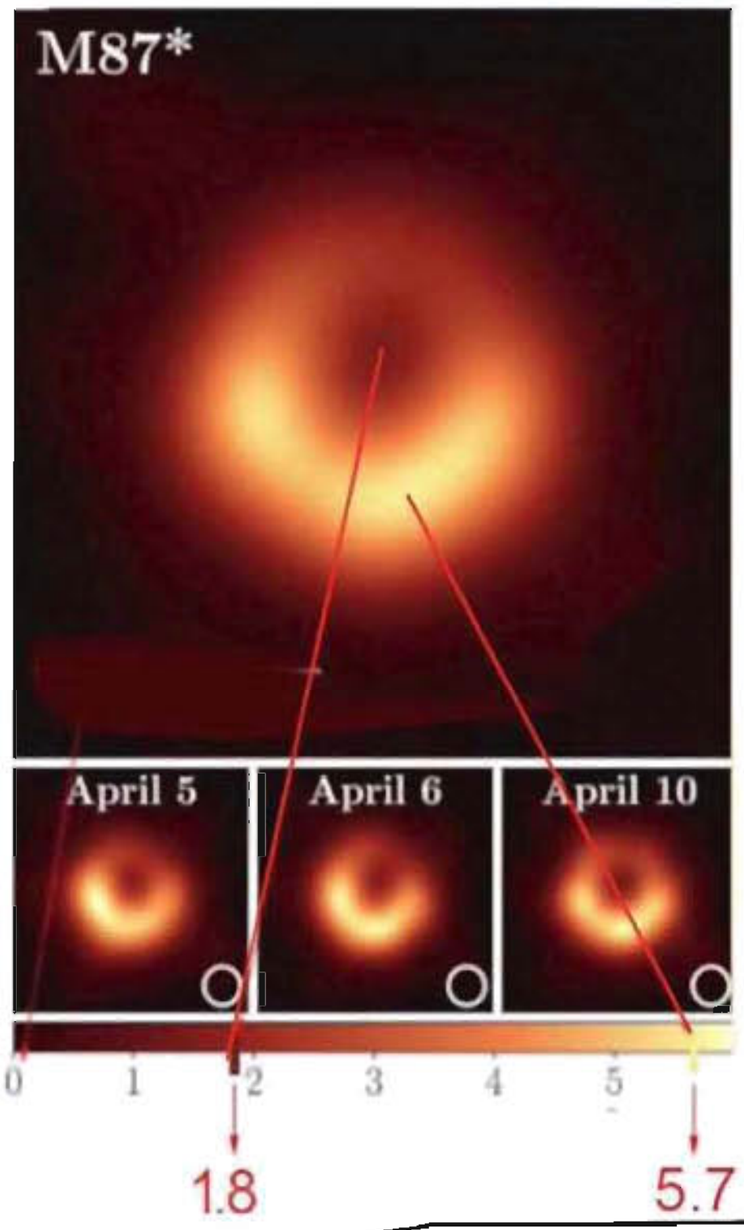


We obtain images from this radio radiation using the vast mirrors of radio telescopes, where the reflecting surface is a simple grid whose meshes are matched to the signal wavelength. (as in microwave ovens).

The direction

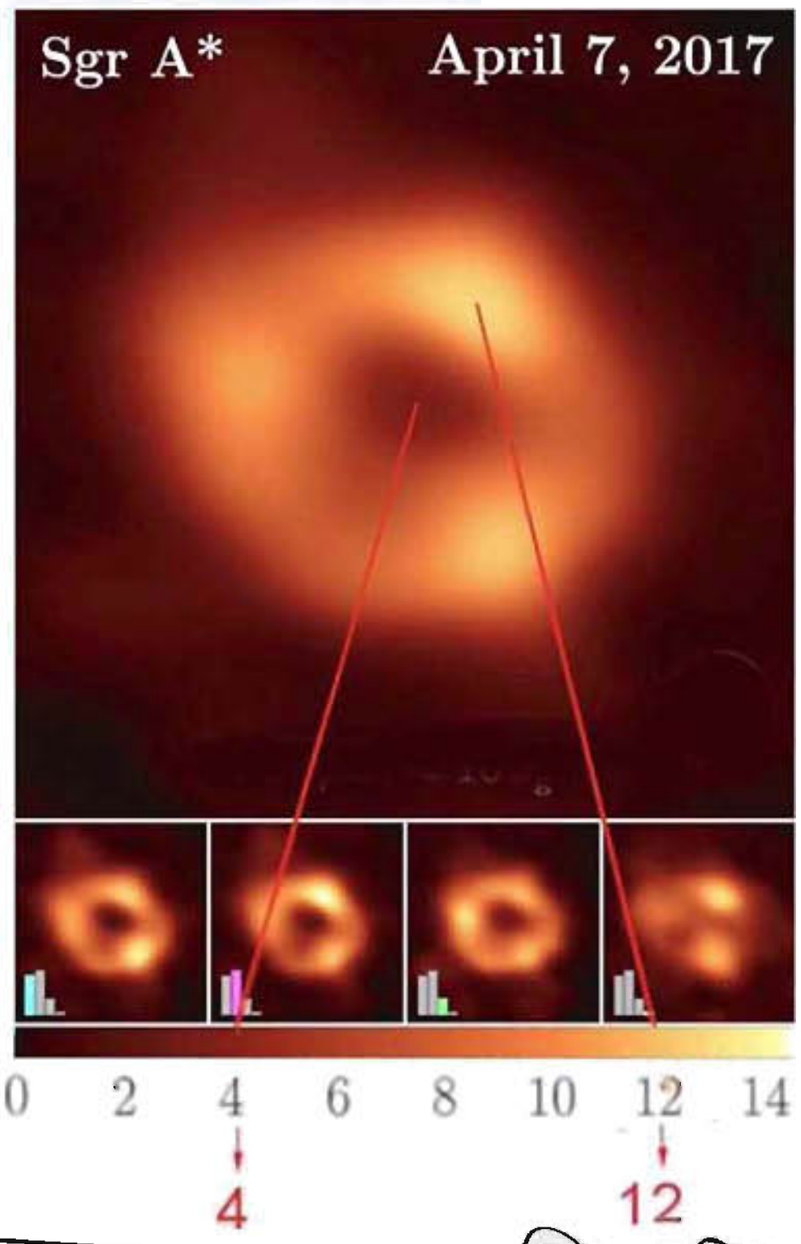
By combining images from several radio telescopes(*) it has been possible to produce two images, firstly of the object located at the center of the Milky Way, a quarter of the galaxy's diameter away, and secondly of another, 2000 times further away, but 1600 times more massive, located at the center of the giant galaxy M87, with a mass of 6.5 billion solar masses.

6.5 billion solar masses



$\frac{5.7}{1.8} = 3.1$

4 million solar masses



$\frac{12}{4} = 3$

There's a bar showing the scale of brightness temperatures, and the ratio of maximum to minimum values in both cases is very close to 3. These are the SUB-CRITICAL OBJECTS from earlier!

No, they're GIANT BLACK HOLES.

(*) ETHC: "First M87 Event Horizon Telescope Results" The Shadow of the Supermassive Black Hole. Astr.Jr. 875:L1 2019 April 10

But their center isn't black!

That's because of the hot gas clouds just ahead.

The objects have masses that differ by a factor of 1600, their maximum brightness temperatures are 4.5 billion degrees for one and 12 billion degrees for the other, but clouds of hot gas are placed just in front of their central parts to give a temperature ratio equal to 3. Who are you trying to kid?

When images of a third object become available, if this ratio of maximum and minimum brightness temperatures is still 3, this will pose a serious problem.

And when these objects form, what happens when the pressure and speed of light at the center become infinite?

Boss, there's a guy who's trouble.

We know all about it. One of us is taking care of it.

What does Schwarzschild have to say about time?

He says that when the speed of light passes through infinity, time reverses (*)

Yes, the time coordinate t.

t

t

The cone of light flips over like an umbrella in strong winds. The higher the speed of light, the more the cone opens.

(*) See Appendix

THE MYSTERY OF PRIMORDIAL ANTIMATTER

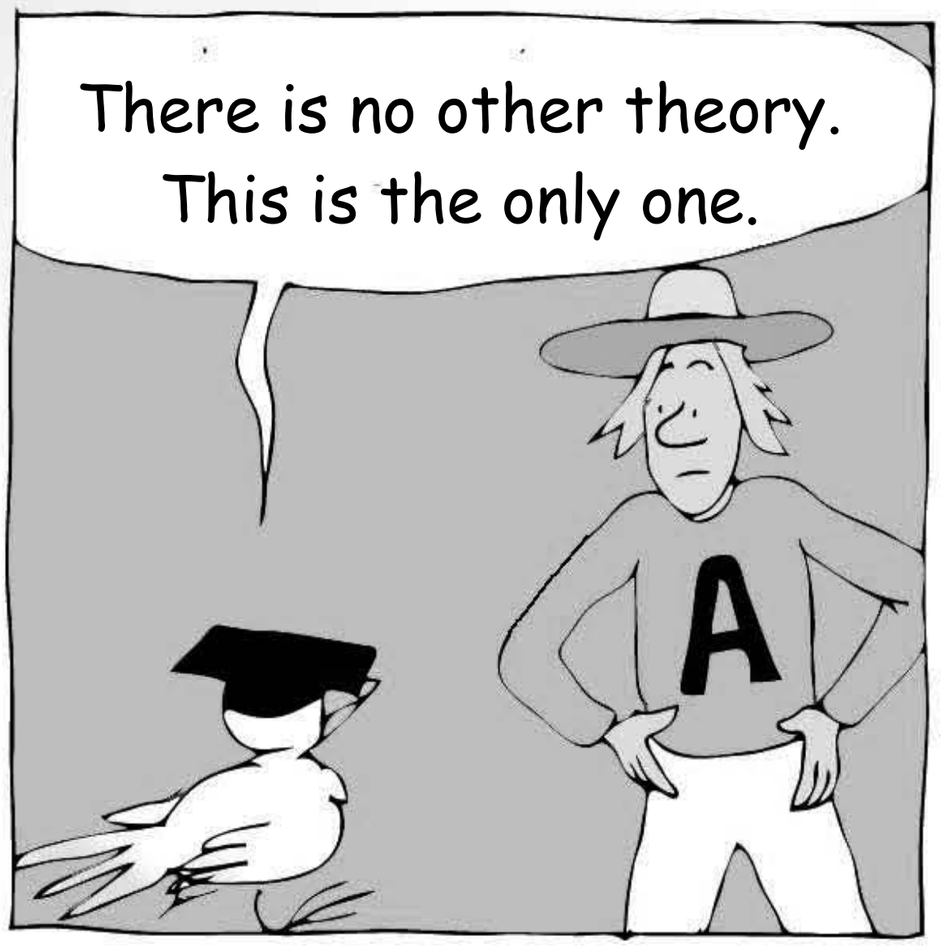
Has anyone imagined that particles could experience time in reverse?

A.Sakharov 1921 - 1989

Yes, the great Russian physicist Andrei Sakharov (*) thought that primordial antimatter (**), which nobody detects, was located in a twin universe of our own where time flowed in an opposite direction.

And what are the other theories?

There is no other theory. This is the only one.



(*) Inventor of the Russian H-bomb

(**) See the comic strip BIG BANG

But what do they say at conferences and seminars?

We never talk about it, it's a NON-SUJET.

You still haven't understood that in the scientific world, when there's a question you can't answer, you pretend it doesn't exist!

But then, just after the BIG BANG, we lose half the Universe along the way. That's no mean feat!

In my opinion, if Sakharov had used the term BLACK UNIVERSE, it would have gone down much better.

Or is it because it's Russian?

Look, a string theory specialist!

We could ask his opinion on this question of time inversion.

I'm going to take off.

I may have something for you.

The French mathematician JEAN-MARIE SOURIAU was, along with the American KOSTANT and the Russian KIRILOV, the founder of SYMPLECTIC GEOMETRY. Unlike the first two, he set out to identify the applications of this GEOMETRY to PHYSICS.

Notes

NATURE
GRAMMA

Ploum his cat

Mathematics is like shoes. You can walk without them. But with them, you can go faster and farther.

(*) Died in 2012. The author was his pupil.

* Souriau's theorem (1970): the inversion of TIME leads to the inversion of ENERGY, MASS and IMPULSION, but retains SPIN as a pure geometrical quantity.

$$R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} = \chi T_{\mu\nu}$$

Imagine, Tiresias, that NEWTON'S LAWS(*) are derived from my equation as an approximate form.

Wow!

If you introduce negative masses into my GENERAL RELATIVITY model, you get these weird interaction laws:

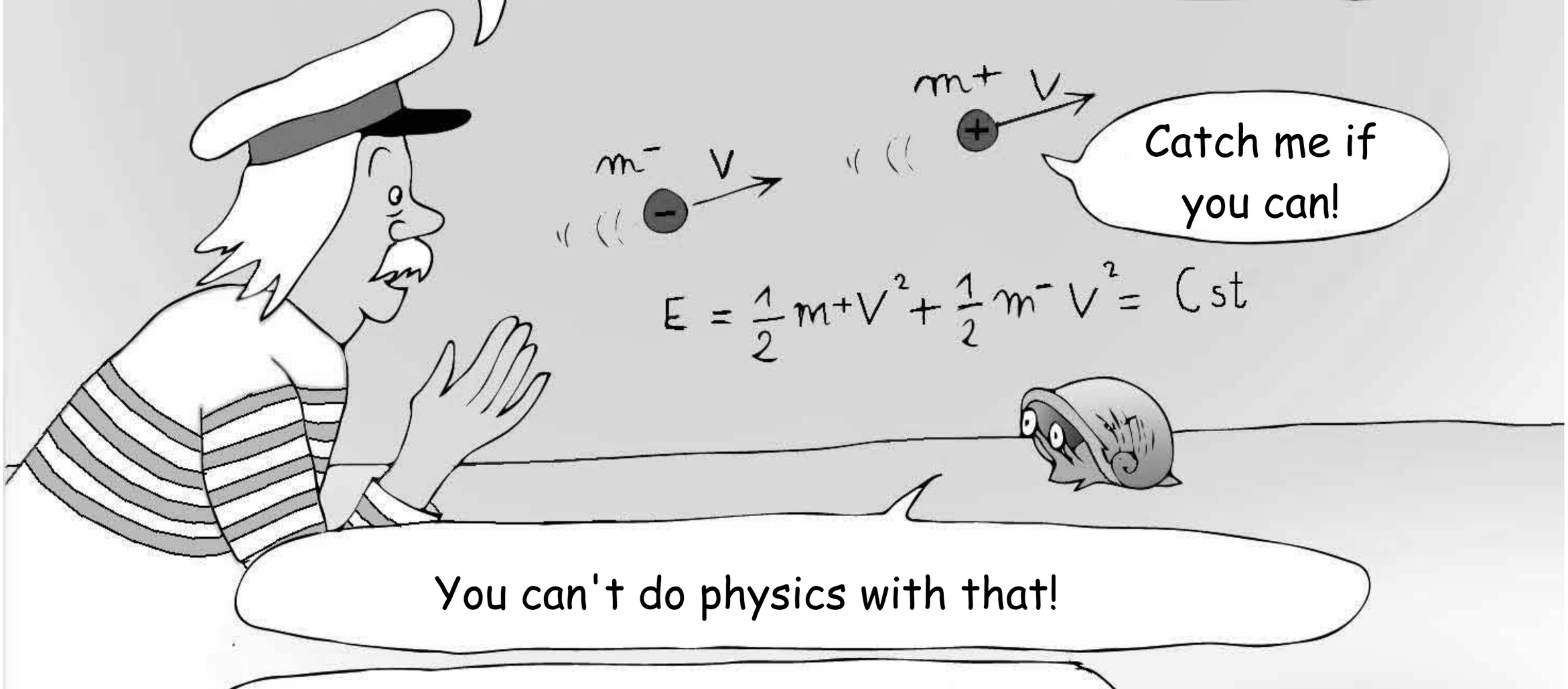
RUNAWAY

Negative masses repel positive masses, which flee!

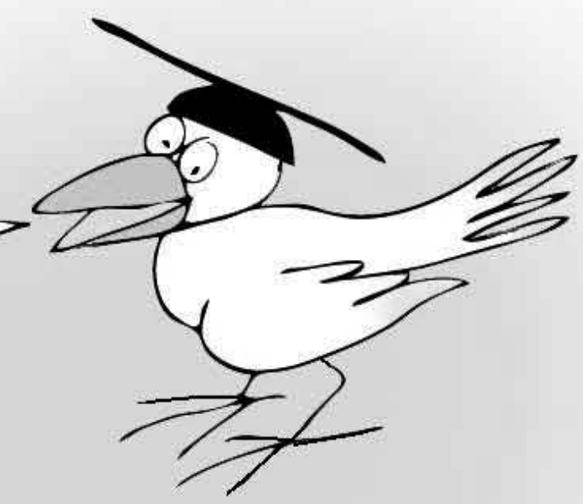
(*) its Newtonian "approximation"

THE RUNAWAY PHENOMENON(*)

In a universe containing positive and negative masses, when a +m mass meets a -m mass, the latter repels the +m, which flees.
But as the +m attracts the -m, the latter follows.
By remaining at a constant distance, the two accelerate indefinitely. But as the kinetic energy (**) of the negative mass is itself negative, the phenomenon occurs without any energy input.



The scientific world concluded that negative masses could not be present in the universe.



(*) RUNAWAY

$(**) \frac{1}{2} m^- V^2$

(*) Jean-Pierre Petit maintained friendly relations for many years with his friend and neighbor Alexandre Grothendieck, a pioneer of ALGERIAN GEOMETRY.

You see, models are like windows that suddenly open up, revealing new perspectives. But over time, they always end up turning into prisons, from which you have to agree to get out.

The fact that things have been going so badly for so long, and that no one can find anything, is a sign that we need to get out of a new prison that we can't see, and find something else.

There's no model that escapes this. Even if it worked for a very long time.

Schwarszchild and Souriau: clever foxes. It's too easy to dismiss these negative masses because they don't fit into Albert's field equation. Perhaps they have their own world... their own equation?

A world of negative masses with its own equation,

a relativistic equation, similar to Albert's,

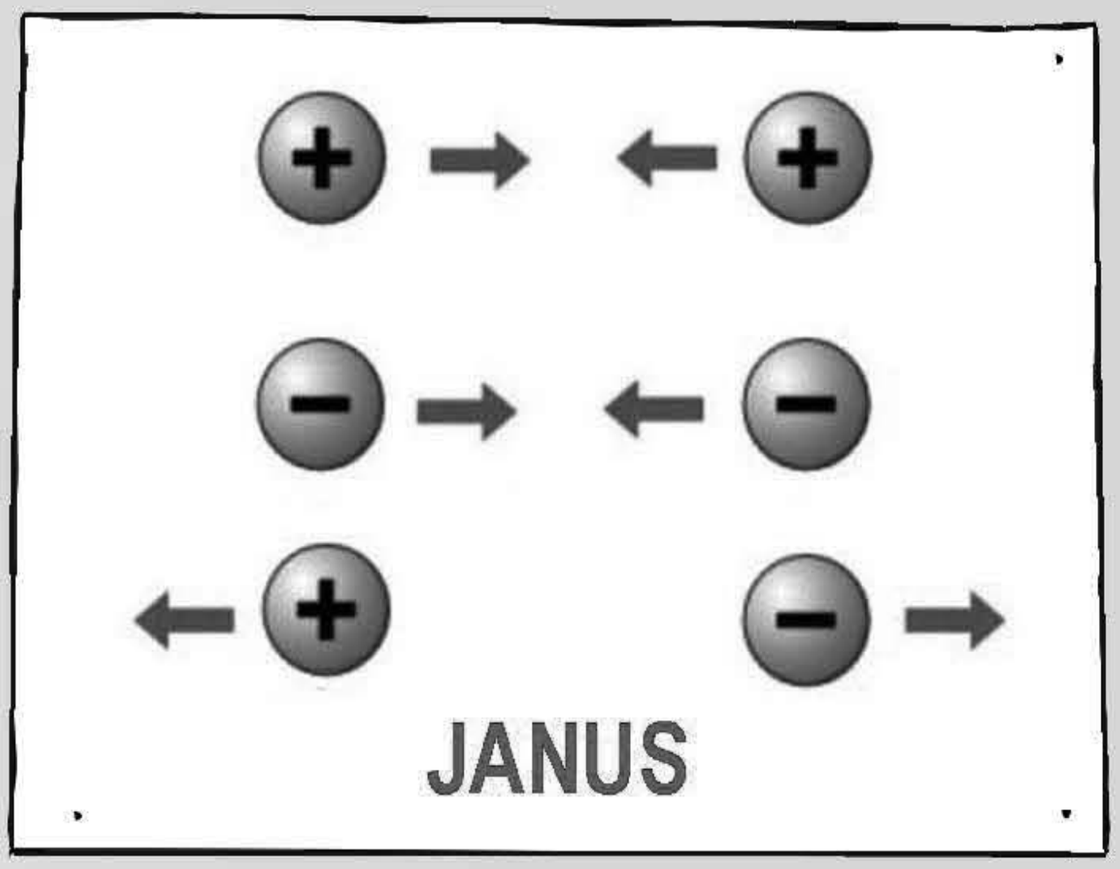
with interaction terms that would give the right laws,
those that satisfy the ACTION-RESPONSE principle and
eliminate that pesky RUNAWAY phenomenon.

Now I've got it!

$$R^{(+)}_{\mu\nu} - \frac{1}{2} R^{(+)} g^{(+)}_{\mu\nu} = \chi \left[T^{(+)}_{\mu\nu} + \sqrt{\frac{g^{(-)}}{g^{(+)}}} \hat{T}^{(-)}_{\mu\nu} \right]$$

$$R^{(-)}_{\mu\nu} - \frac{1}{2} R^{(-)} g^{(-)}_{\mu\nu} = - \chi \left[\sqrt{\frac{g^{(+)}}{g^{(-)}}} \hat{T}^{(+)}_{\mu\nu} + T^{(-)}_{\mu\nu} \right]$$

Burp!



From these equations derive the laws

Out with the RUNAWAY effect

Like Einstein's equation, this second equation, which governs the world of negative masses, requires their speed to remain below c(-), which is the speed at which photons γ(-) of negative energy travel.

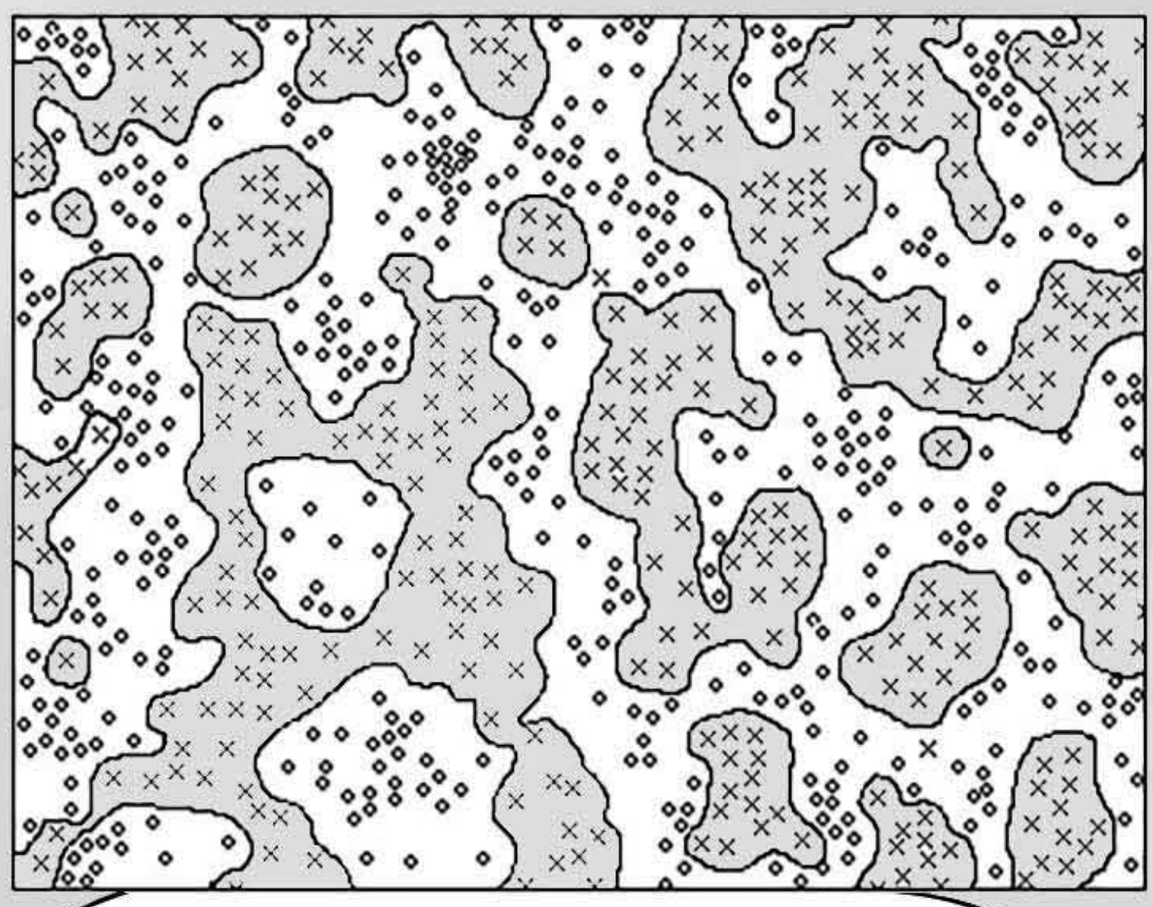
And c(-) is a priori different from c(+)

And since our eyes and optical instruments don't pick up these photons emitted by negative masses, they're basically invisible!

In other words, it's a special form of dark matter.

No, because dark matter has positive mass. It attracts ordinary matter, while negative mass repels it.

Masses of the same sign attract each other according to Newton's law. Opposite-sign masses repel each other according to "anti-Newton", as shown in my two equations. Now, how does this mixture behave?



The two populations are separating, but what to do with it all?

Be a little logical. You've given the same density ρ to both populations, while the invisible components obviously play the most important role.

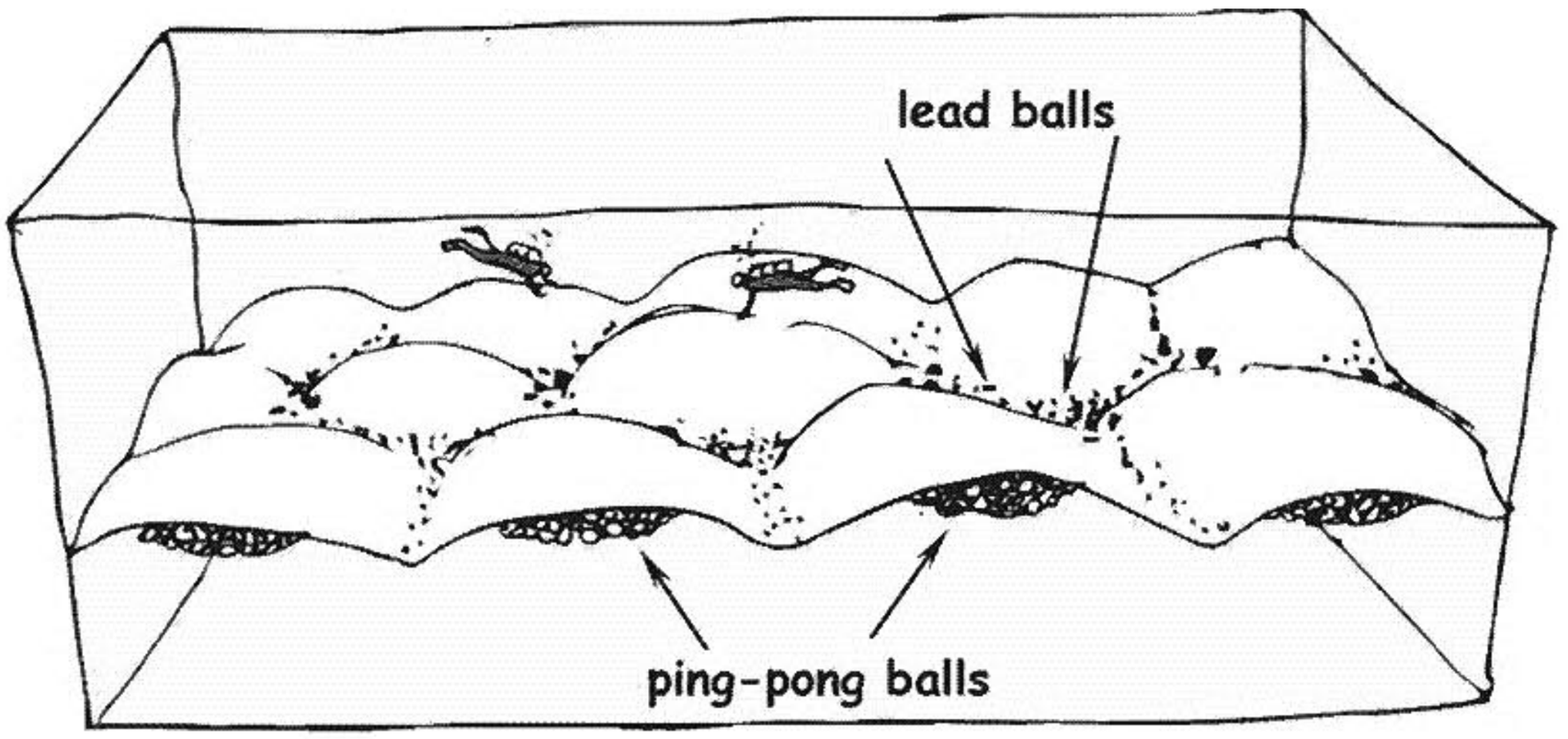
You're right. I'll take |ρ-| > ρ+ and let it run all night.

To better understand how gravitational instability works with these two materials made of masses of opposite signs, we'll represent the force of gravity by gravity and the "antigravity force" to which negative masses (of opposite direction) are subjected by the Archimedean force.

In water, separated by a membrane, I'll represent the positive masses by lead balls and the negative masses by ping pong balls.

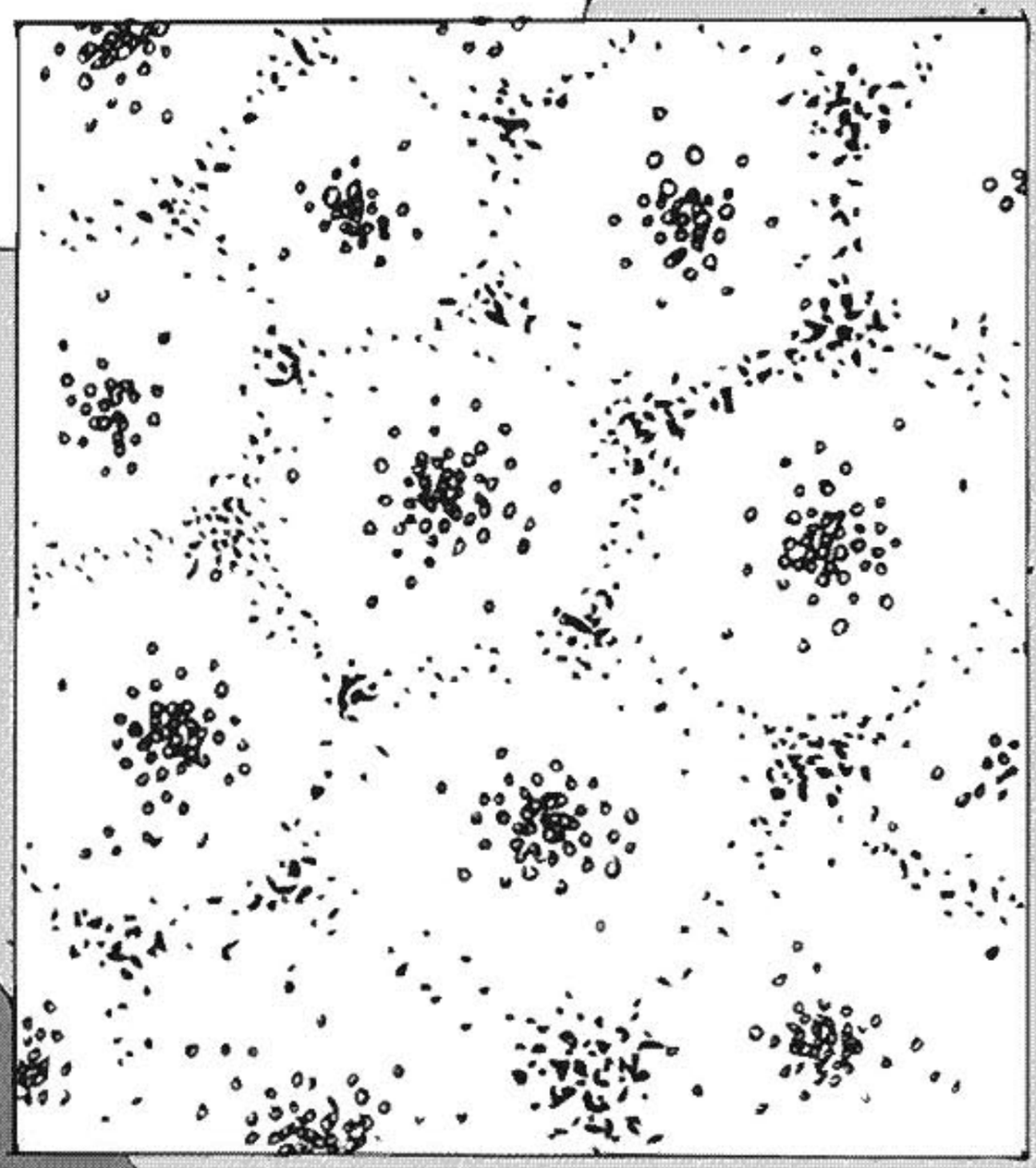
And now what do you do?

Get ready. Do as I do. We're going to experiment.

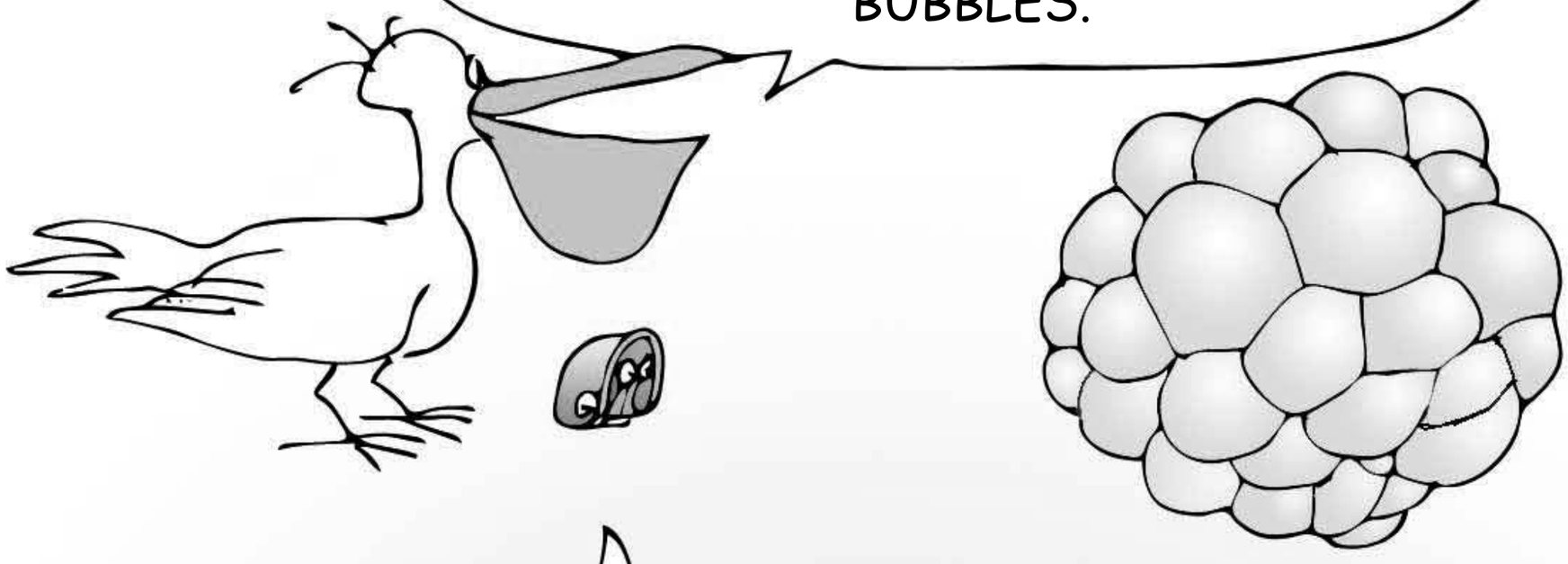


These are the ping-pong balls, pushing the hardest and gathering in evenly-spaced groups. Leads are confined to the valleys, in what remains of the available space.

Similarly, in the Universe, negative masses lead the way, giving rise to a quasi-regular set of conglomerates. As simulations show.

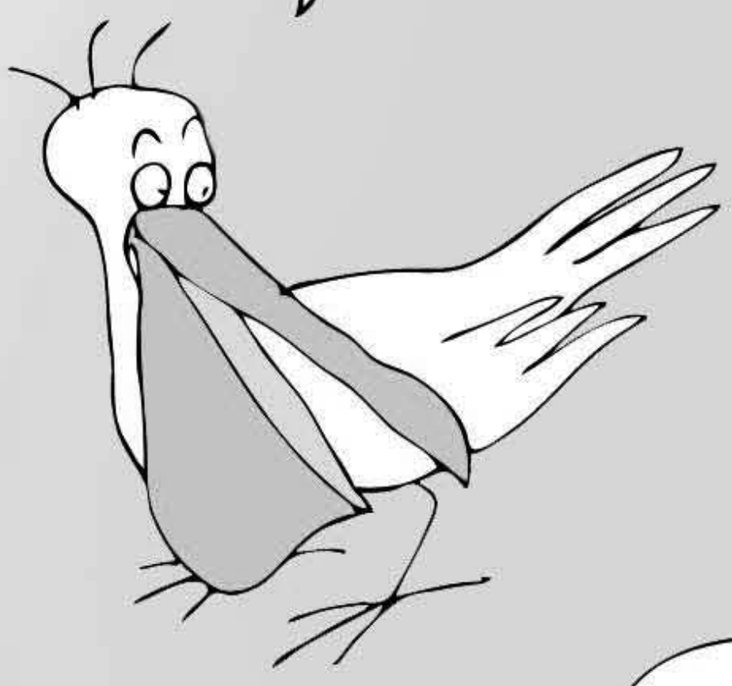


Wait a minute! If I understand correctly in 3D, it looks like JOINED SOAP BUBBLES.

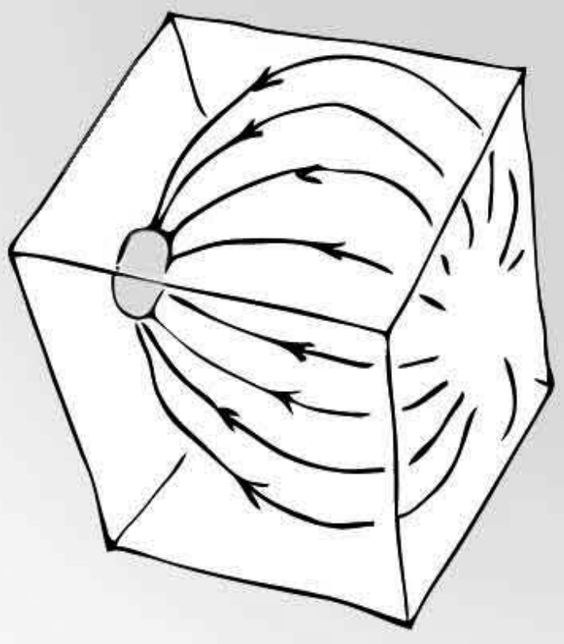


And the matter, tending to gather along the segments common to three bubbles, will give rise to FILAMENTS. At the junction of four of these cells, we obtain GALAXY CLUSTERS!

In other words, at the center of the great void discovered in 1977, there is a concentration of negative mass, perfectly invisible!

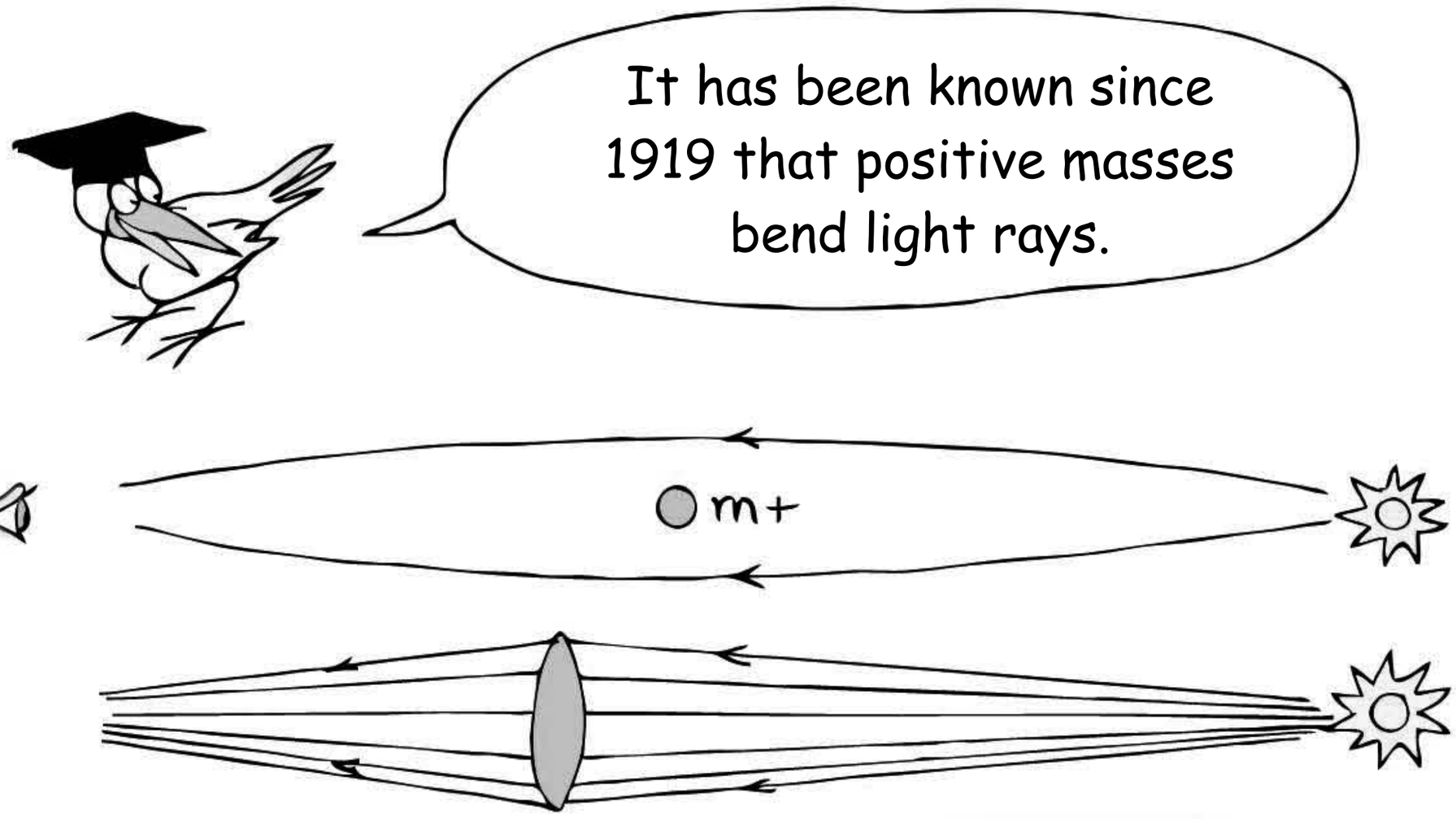


In 2023, this explanation, based on the presence of this negative mass concentration, is the only thing to be found on: https://scholar.google.com (*)

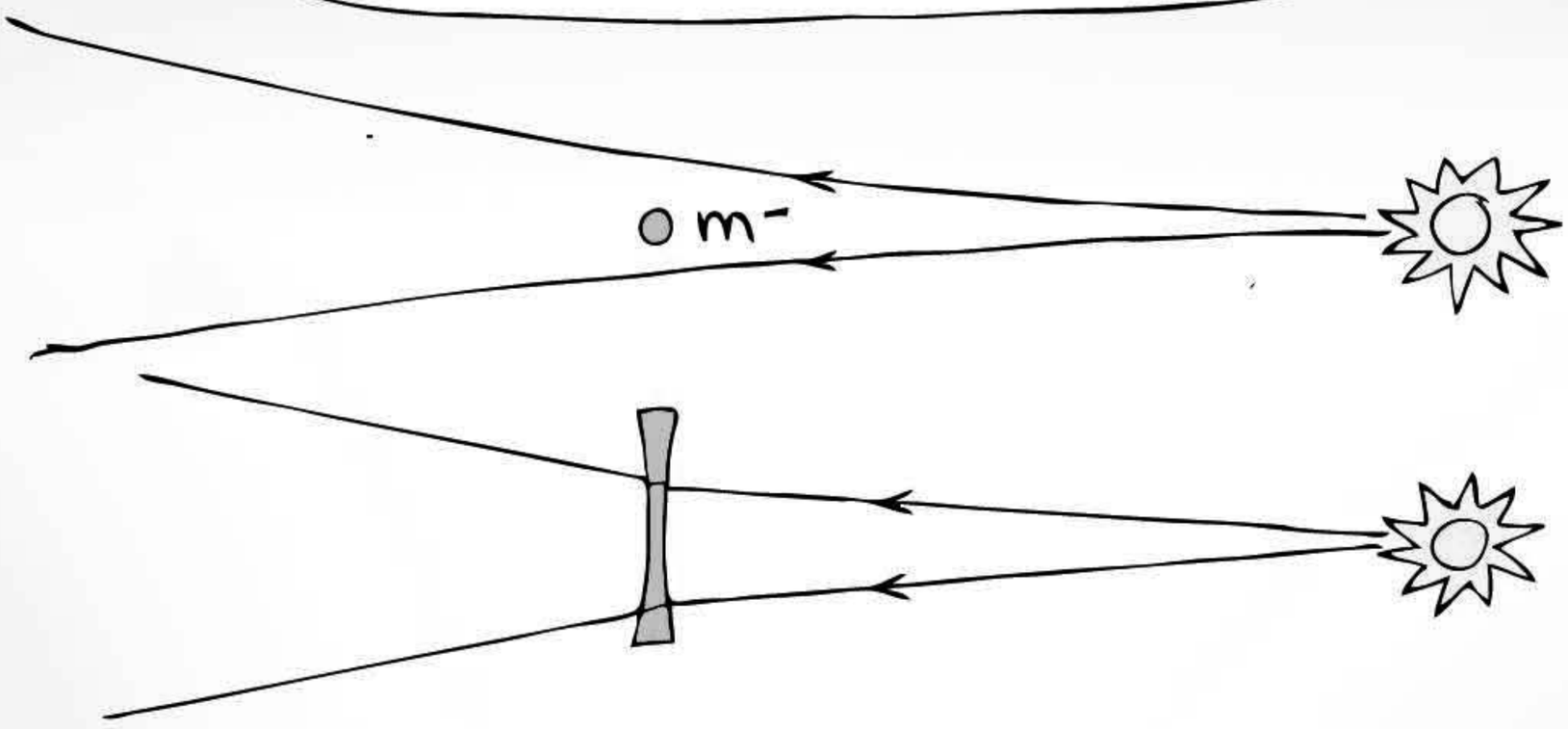


(*) Composer: dipole repeller

The negative gravitational lens effect

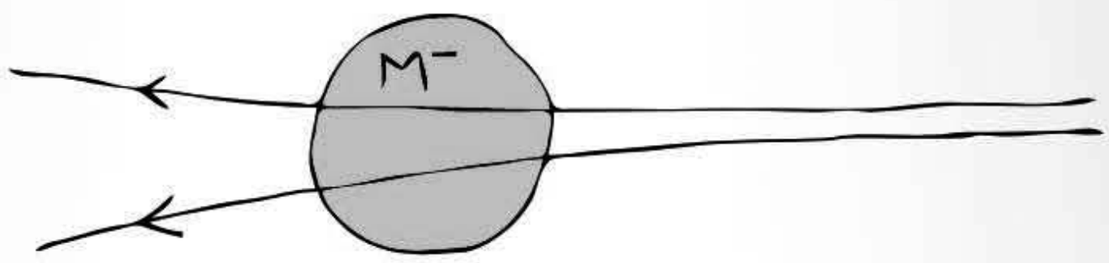


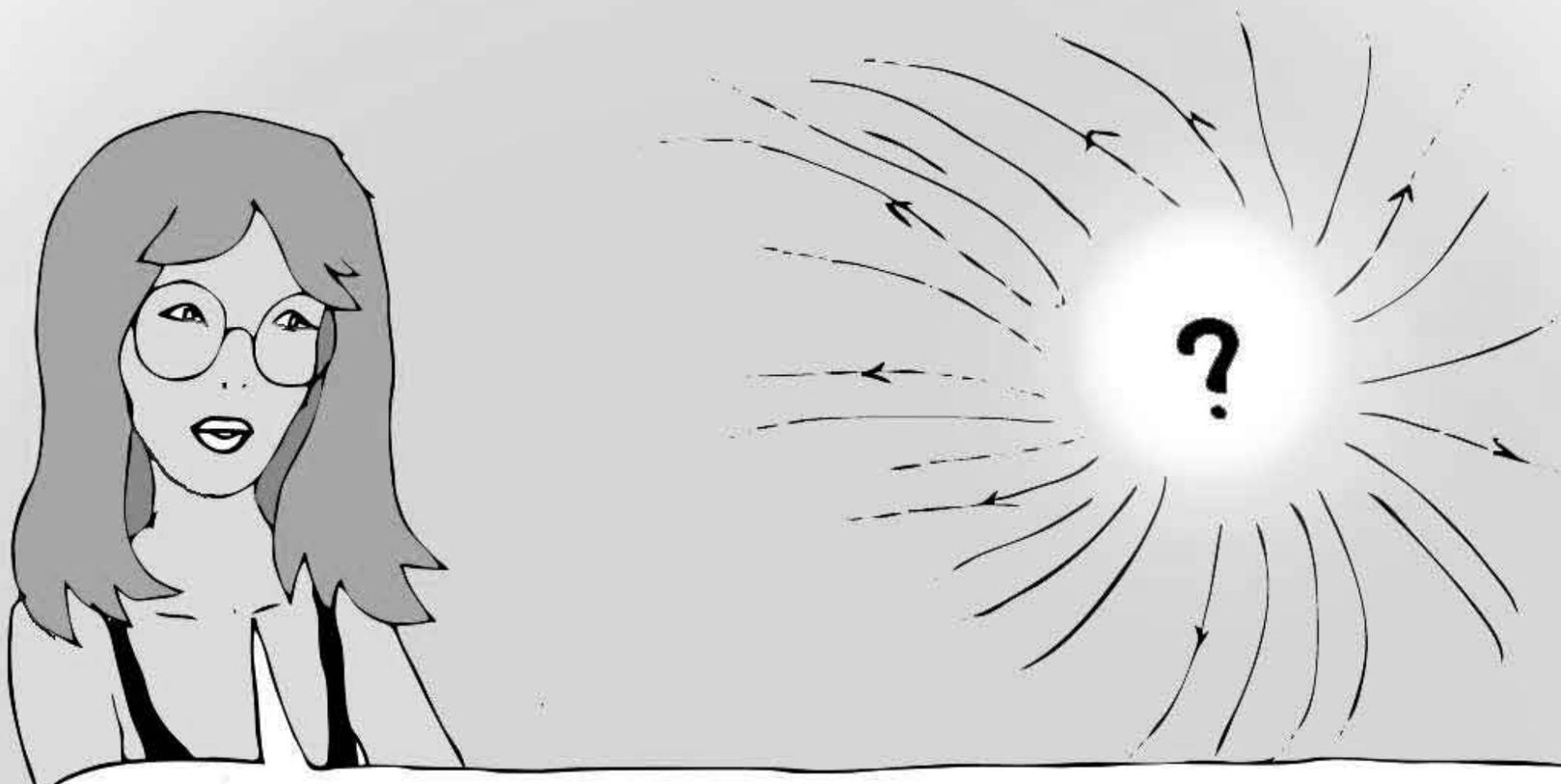
A negative mass produces the opposite effect: like a diverging lens, it scatters light rays, reducing the apparent brightness of distant sources.



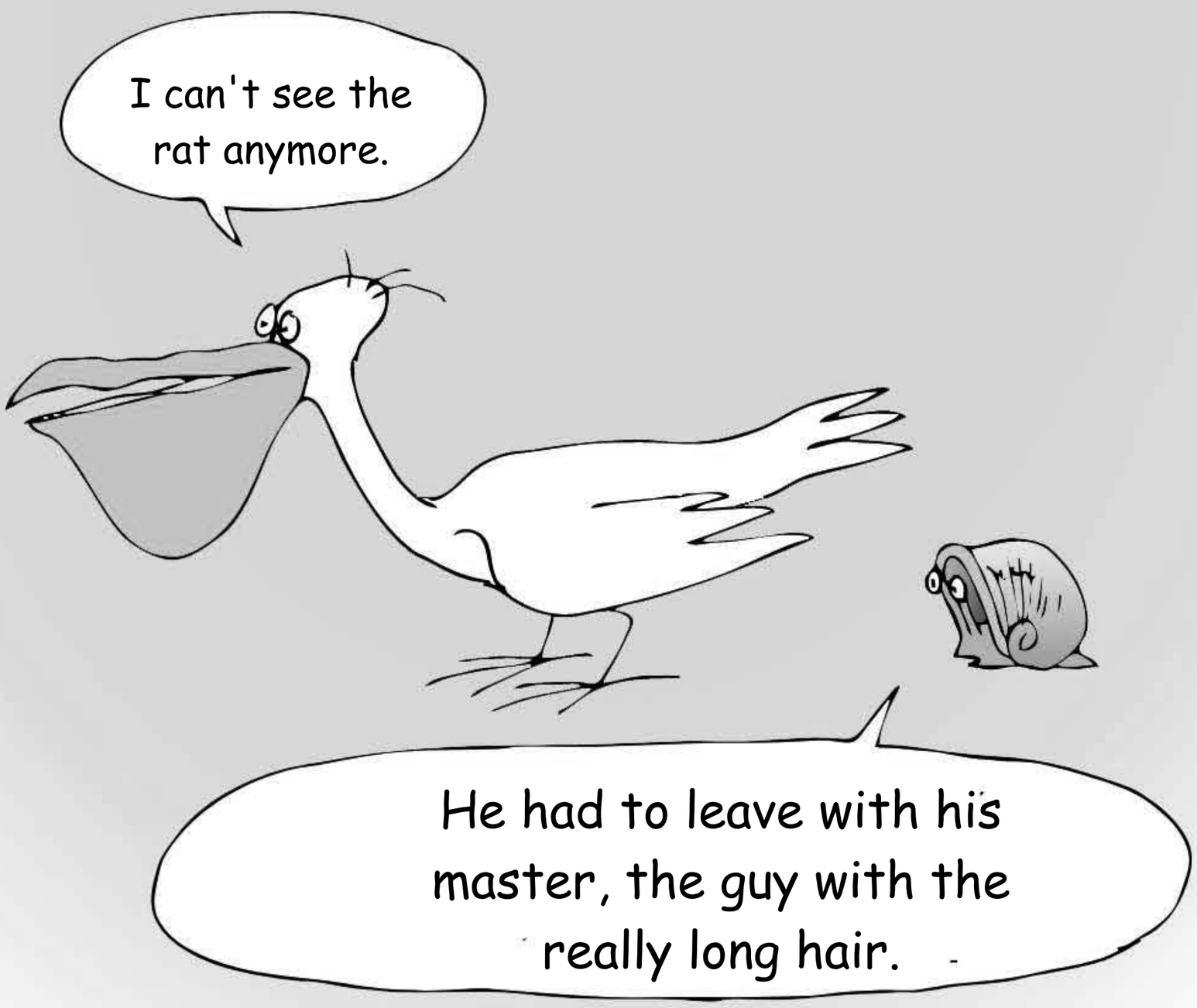
Since 1990, high redshift galaxies had been found to have low magnitudes. This led to the assumption that they were dwarf galaxies. This assumption proved wrong when the JWST telescope revealed that they were similar to nearby galaxies.

Photons pass easily through negative-mass clusters (which interact with m+ masses and γ+ photons only antigravitationally), but this reduces the magnitude of distant sources.





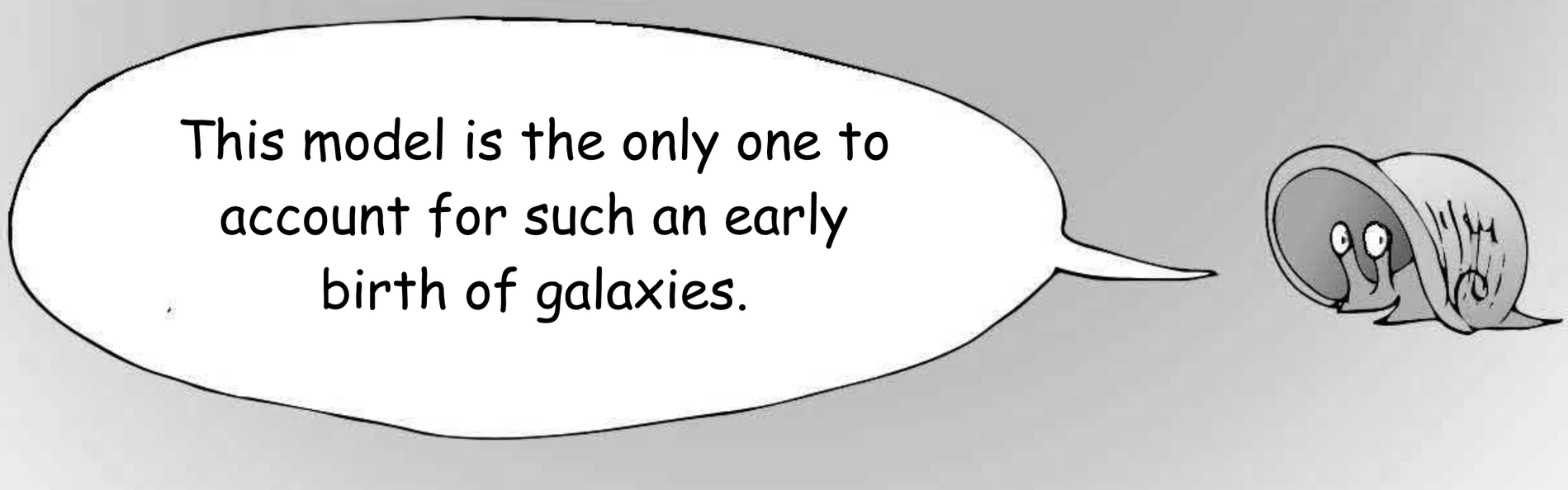
Measurements of the magnitudes of galaxies in the background of the GREAT REPELLER should make it possible to determine the diameter of this concentration of negative mass, responsible for their attenuation. The object is a priori spheroidal. The extended reach of the JWST space telescope will enable us to extend the 3D map of the velocity field by discovering other large voids.



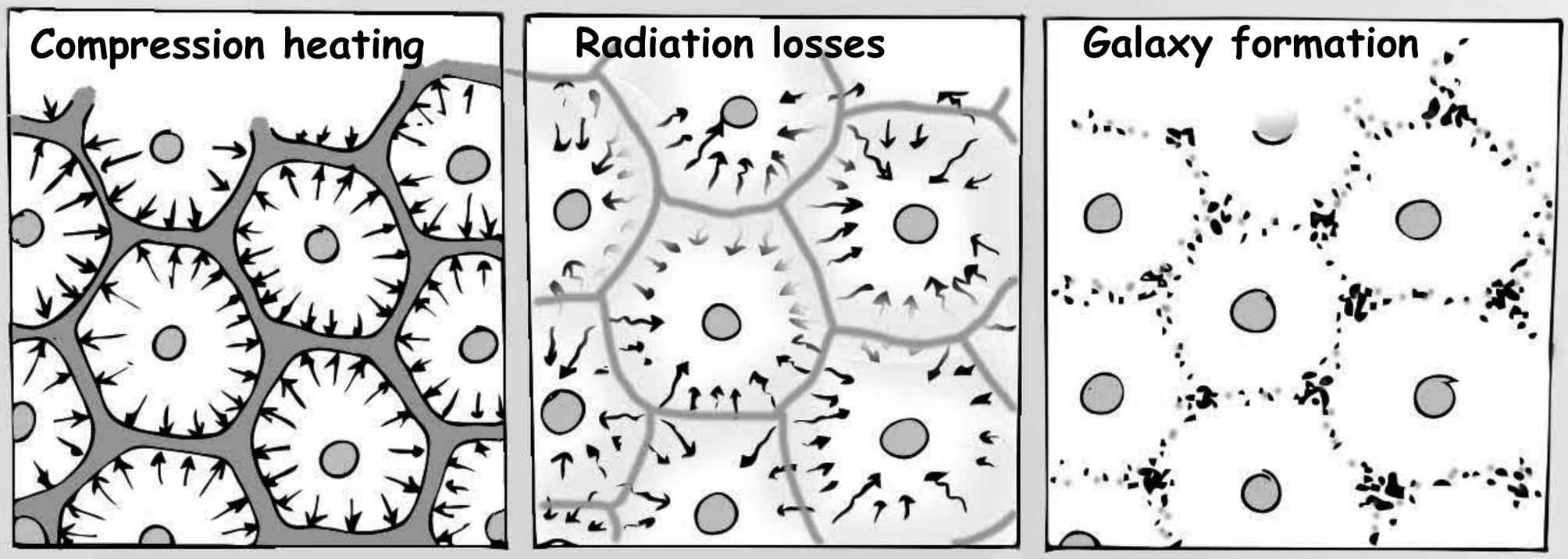
GALAXY FORMATION

At the end of the RADIATION ERA, gravitational effects come into full play. Positive and negative masses suddenly separate. The positive mass finds itself sandwiched between two conglomerates of negative mass, which exert a retro-compression on it, heating it up. But its membrane-like configuration means it cools no less rapidly through radiative losses. Destabilized (*), the positive mass then gives rise to ALL GALAXIES, which form in the first hundred million years.

The direction

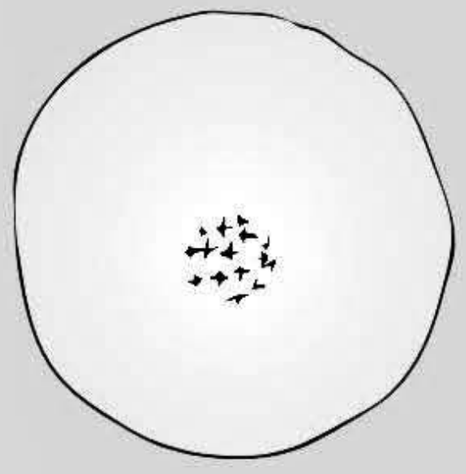


(*) see the comic strip A THOUSAND MILLION SUNS

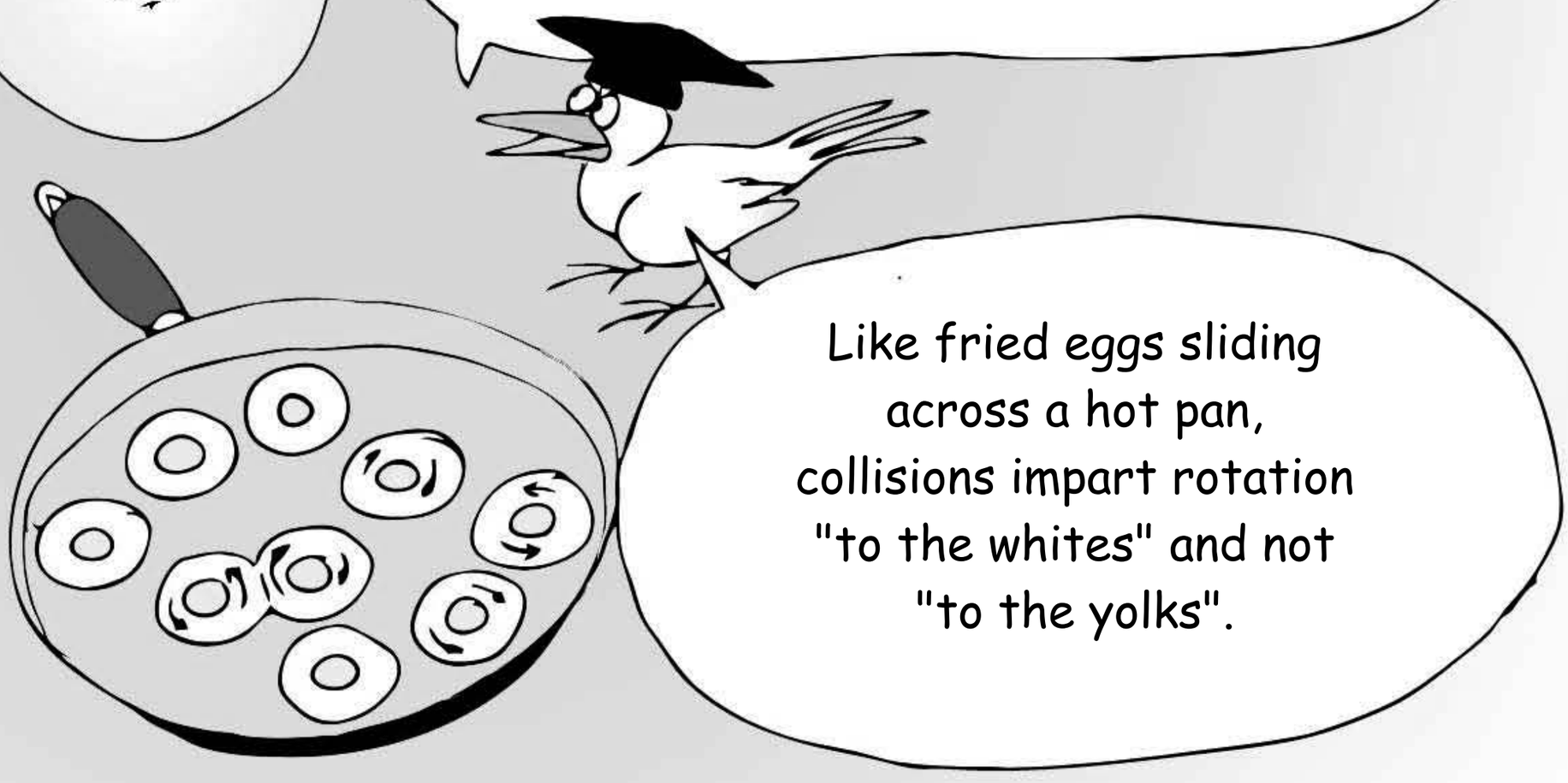


Heating is most intense at the nodes

During this phase, galaxies, packed together like grapes in a cluster, are veritable UV ovens (*), where young primitive stars heat up the residual gas. There are two possible scenarios: massive galaxies impart a thermal agitation speed to the hydrogen atoms that exceeds their liberation velocity. These galaxies, losing their gas, become ELLIPTICS.



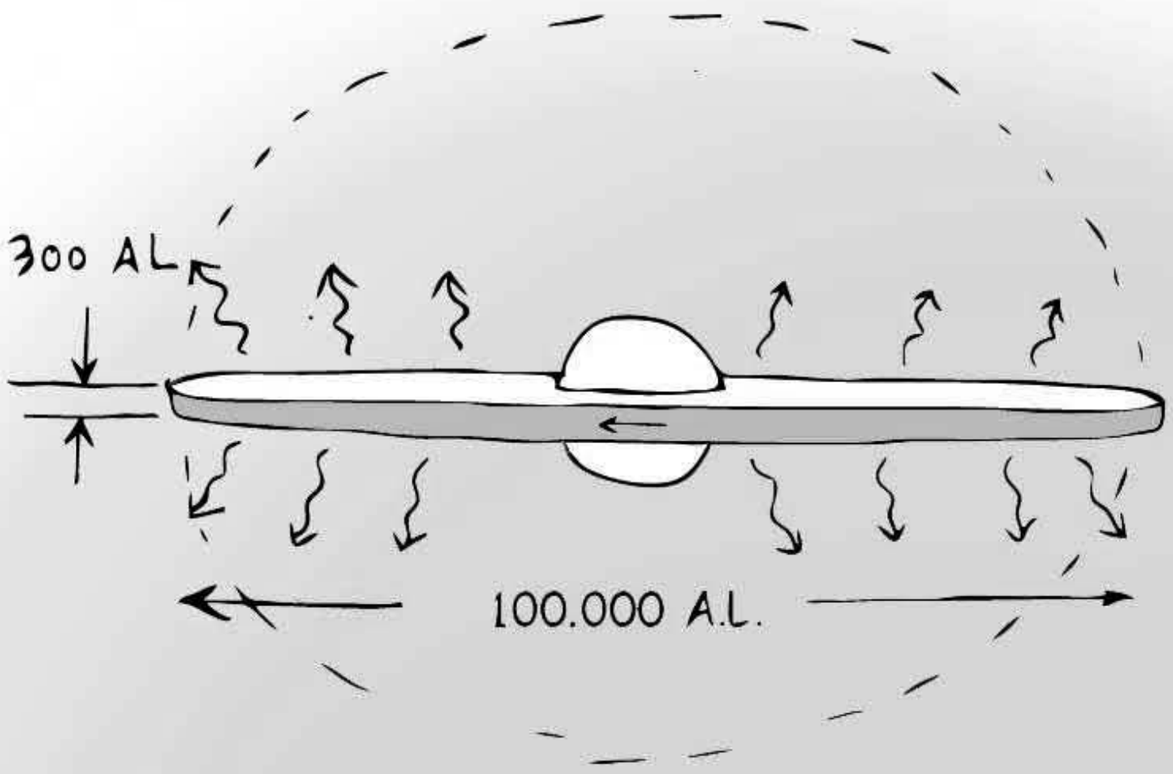
The residual gas of light galaxies expands to form halos, but remains trapped in hundreds of globular clusters containing young stars.



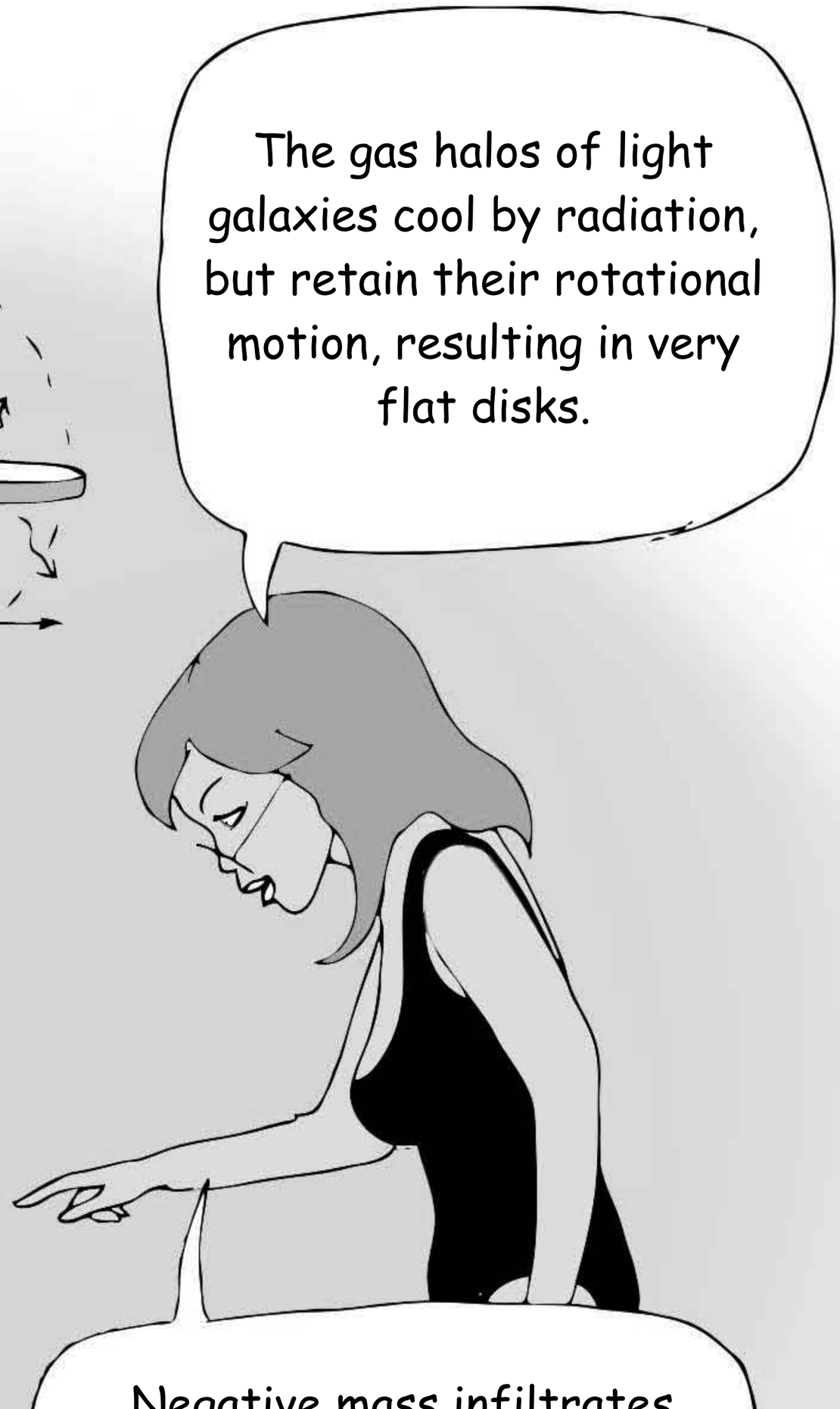
Like fried eggs sliding across a hot pan, collisions impart rotation "to the whites" and not "to the yolks".

(*) which explains why intergalactic gas is at 10^6 K

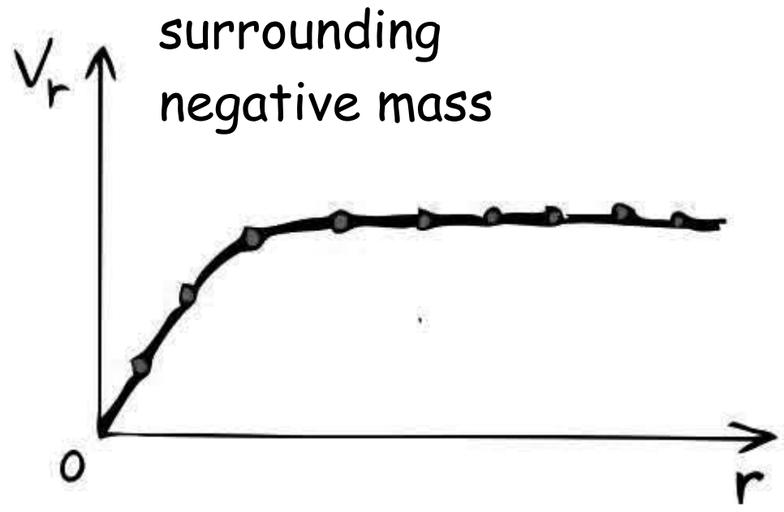
The origin of galaxy rotation



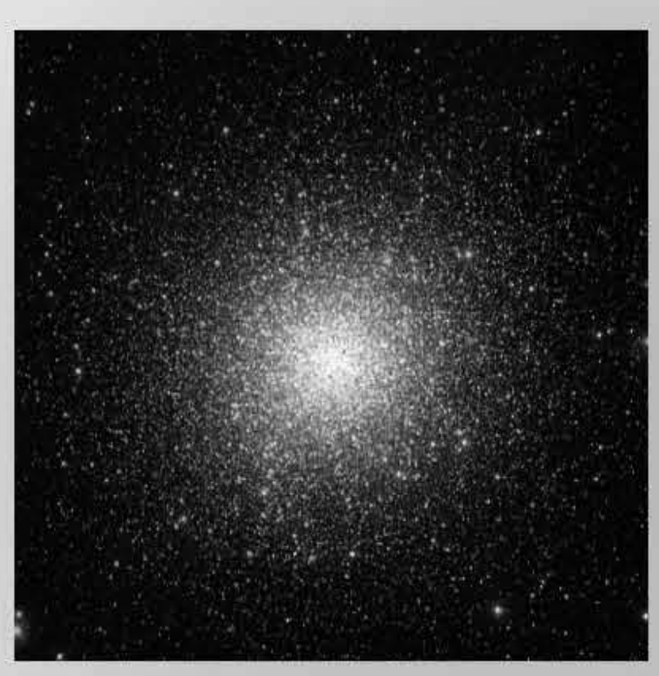
The gas halos of light galaxies cool by radiation, but retain their rotational motion, resulting in very flat disks.



Containment by the surrounding negative mass



Negative mass infiltrates galaxies more or less efficiently, contributing to their confinement and giving them a flat profile.

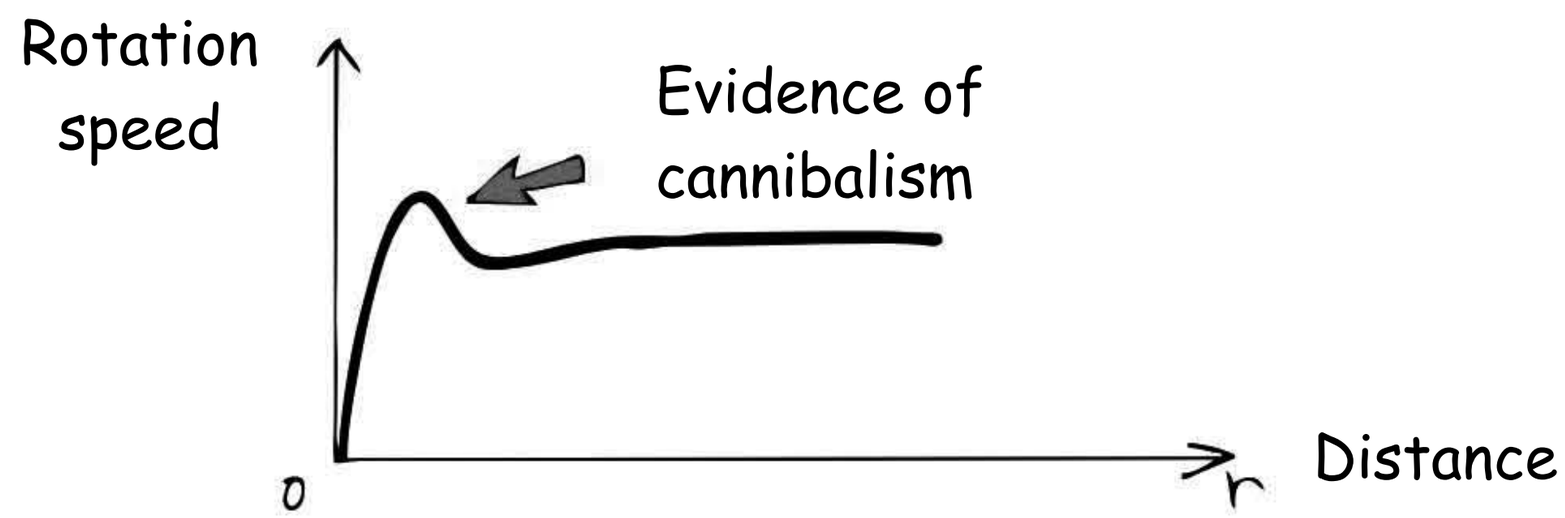


Hercules cluster

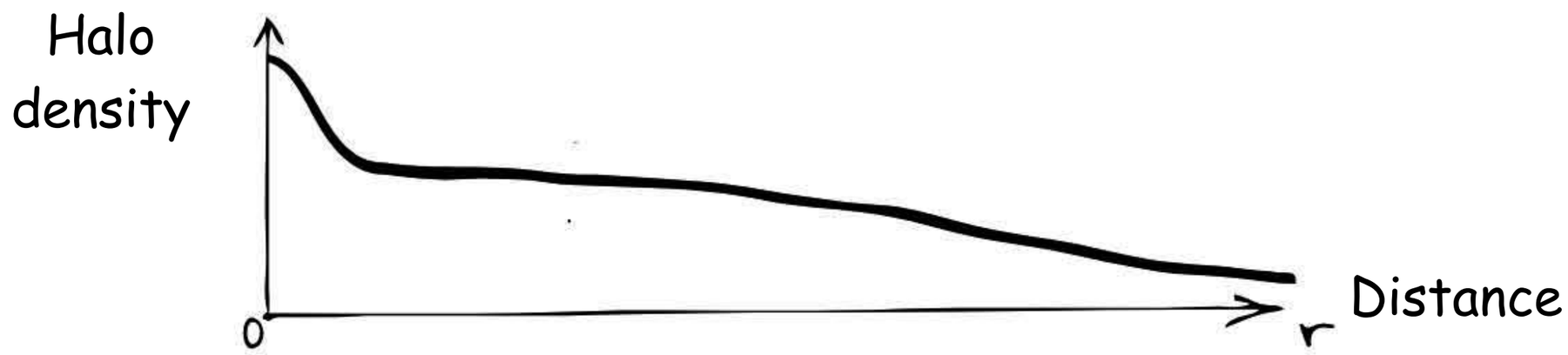
The hundreds of GLOBULAR AMAS made up of the oldest stars represent the fossil of the primitive galaxy, spheroidal and free of rotational motion.

Cannibalism

Large galaxies swallow up small ones. The vestige can be seen in the rotation curves. Galaxies are non-colliding systems. The small galaxy retains its rotational momentum. Its set of stars is squeezed into the gravitational field of the larger galaxy. This increases the speed of its stars:



ASTROPHYSICIANS, who deduce the density of the large dark matter halo, are astonished by the presence of a central peak necessary to counterbalance the overflows.



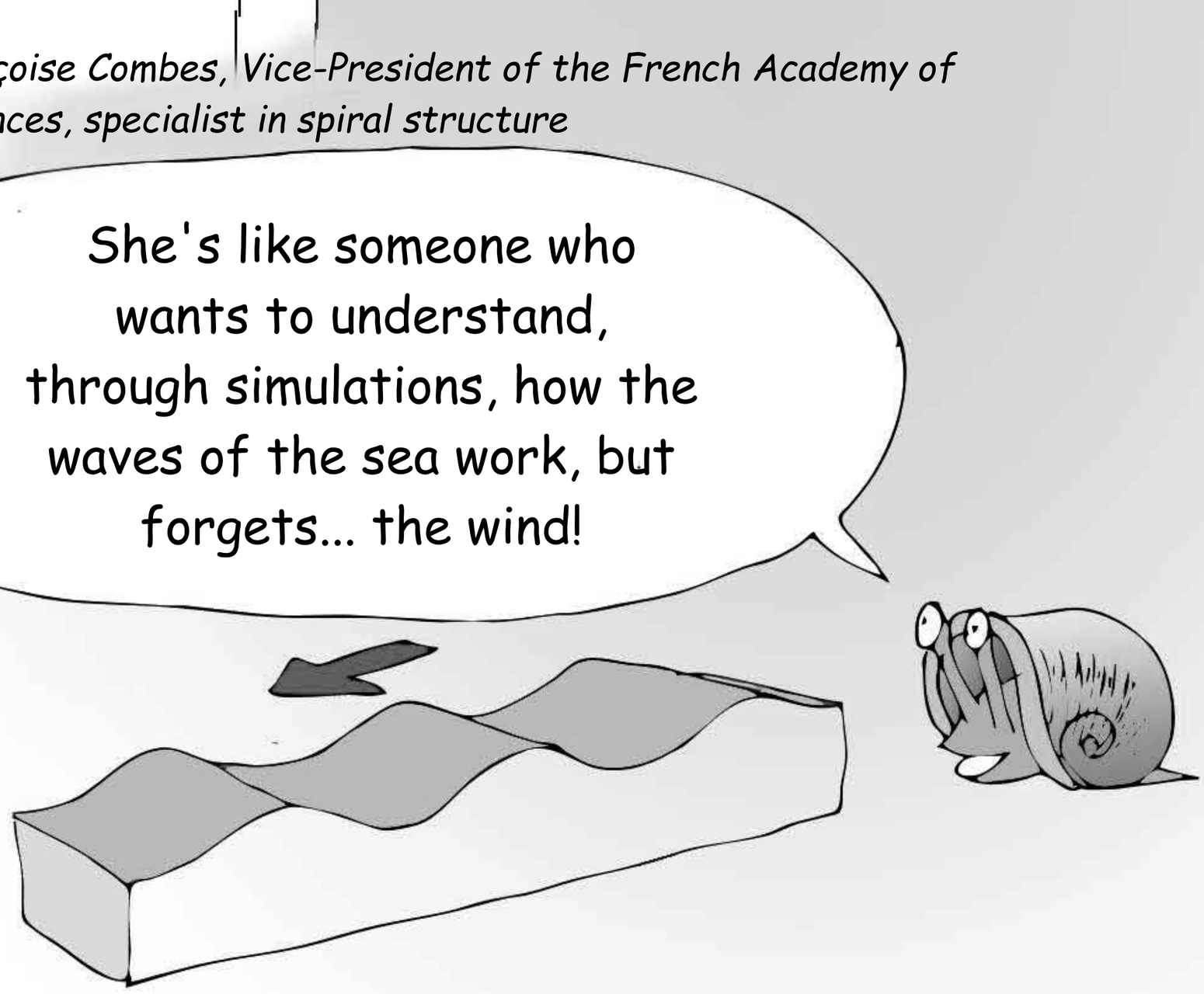
When the wise man shows the moon, the fool looks at the finger.

The raison d'être of the spiral structure

Since 1990, no matter how many times we introduce the spiral structure as an initial condition in simulations, it dissipates in little more than one revolution. We still need to find the mechanism that will keep it going.

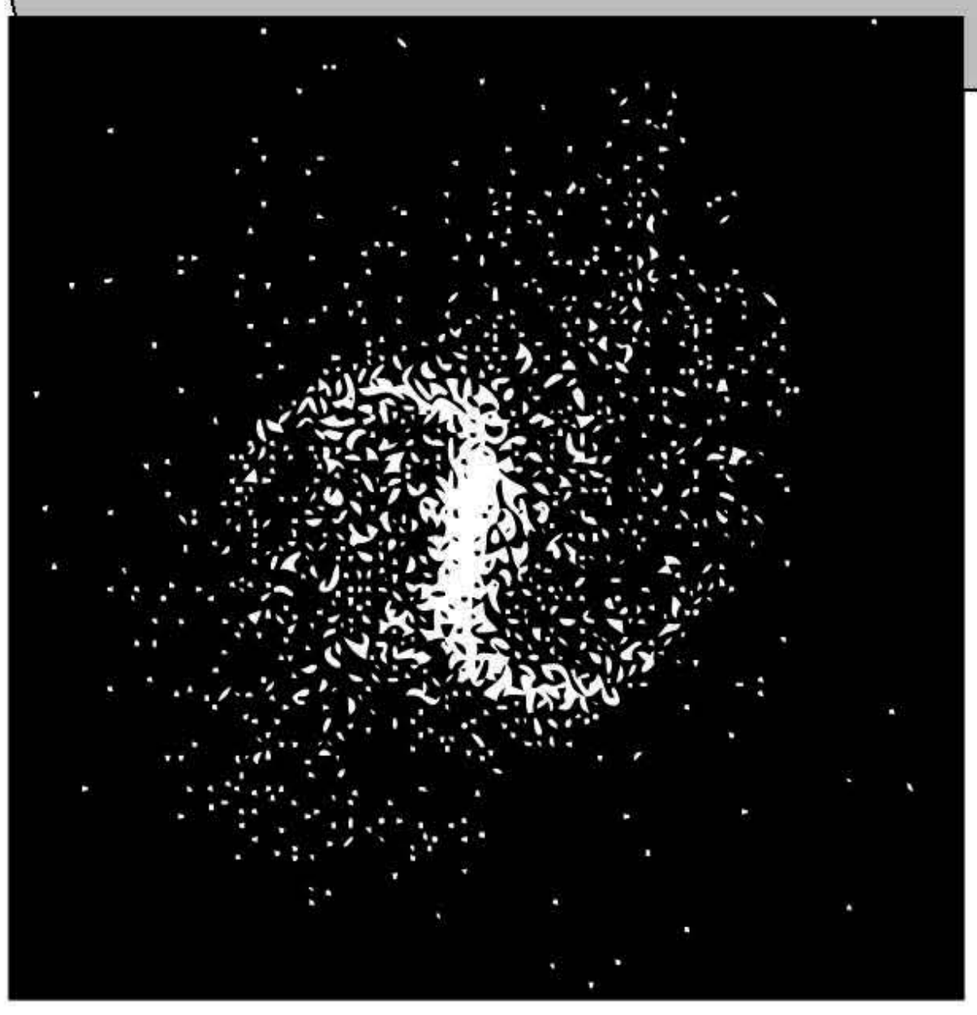
Françoise Combes, Vice-President of the French Academy of Sciences, specialist in spiral structure

She's like someone who wants to understand, through simulations, how the waves of the sea work, but forgets... the wind!



A vortex, in a fluid, dissipates its momentum by transporting it from near to near, through collisions. But galaxies are non-colliding media, so they can't transfer momentum and energy in this way.

They couple to their surroundings by means of DENSITY WAVES, which also appear in the surrounding negative mass. The forces that bind these two media at a distance are gravitational in nature.



This is the result of a 1992 simulation. A barred spiral structure appeared immediately and was maintained for 30 revolutions. The trade journals all rejected this work with the same response:

> *Sorry, we don't publish speculative works*

As long as astrophysicists fail to understand that density waves, like spiral structures, reflect a transfer of momentum for which a "partner" (negative mass or another galaxy) is needed, these artificially introduced spiral structures will quickly dissipate.

Hound galaxy

All very well, but which way do these waves turn?

To simulate this, we'll watch for the last second, when the bathtub empties. The water rotates rapidly, leaving only a thin film of water (*). Then you'll fugitively see the spiral waves turning in opposite directions.

It works!

(*) so that friction on the bathtub bottom is high

When the primitive gas halos that form in the earliest moments of galaxy existence, still close to one another, drift like fried eggs in a hot pan, they interact with one another, colliding atoms and setting them spinning. And that's before gravitational instability splits them into lumps (*).

Management

In France, we don't have oil, but we do have sinks.

ACCELERATING EXPANSION

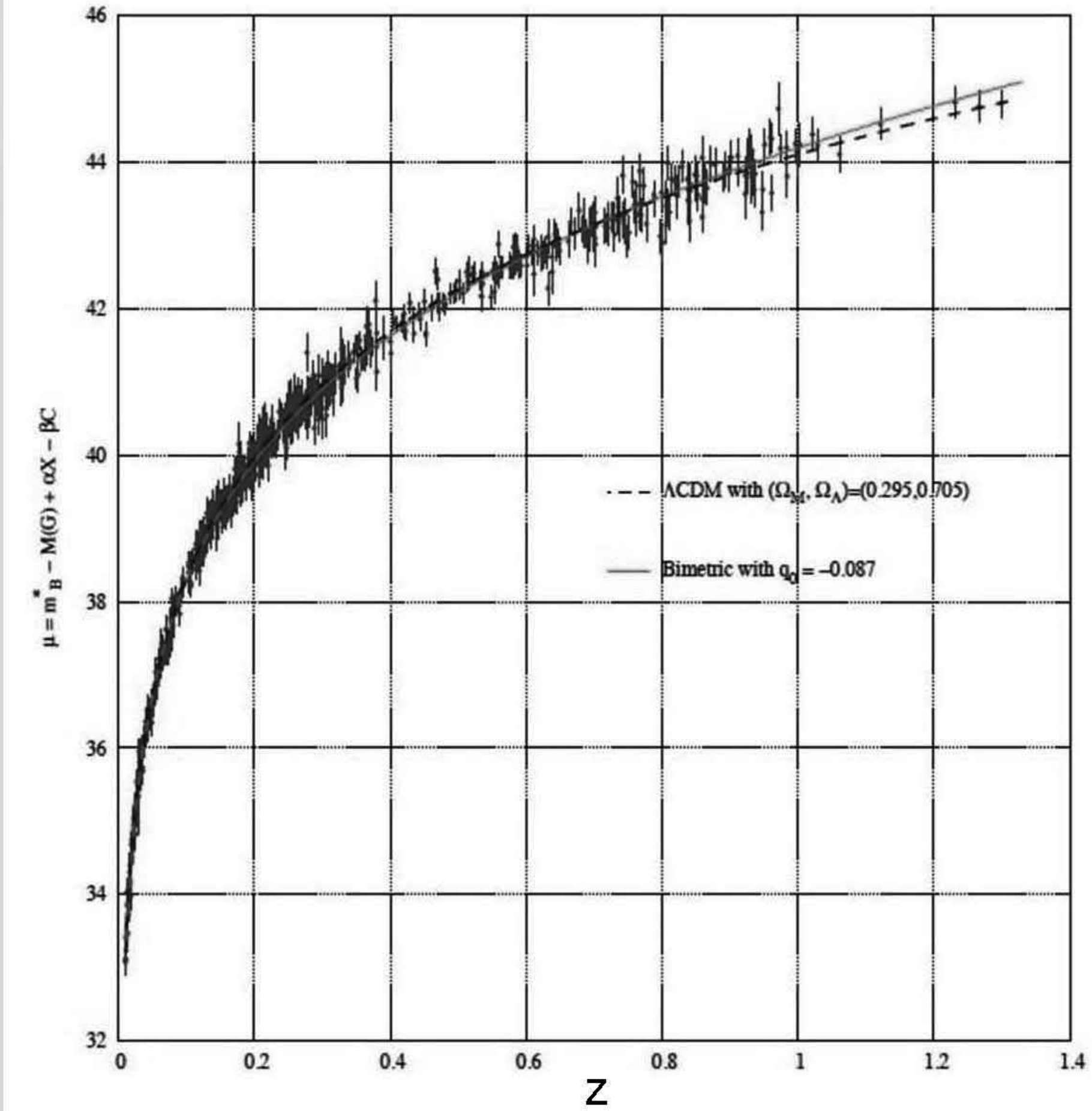
To account for this, I'd need NEGATIVE PRESSURE.

But you've already got it, you big ninny! The one for negative mass is :

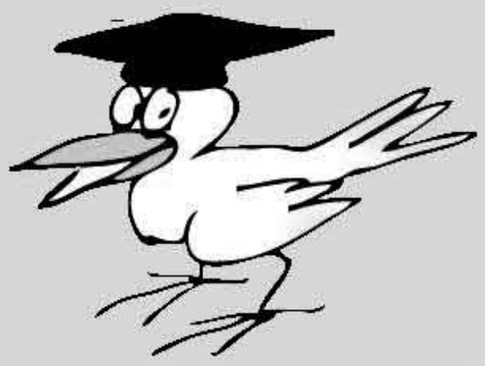
$$p^- = \frac{\rho^- V^2}{3}$$

Your equations give you the solution.

62 (*)with a wide mass spectrum, from 100 to 100,000 solar masses

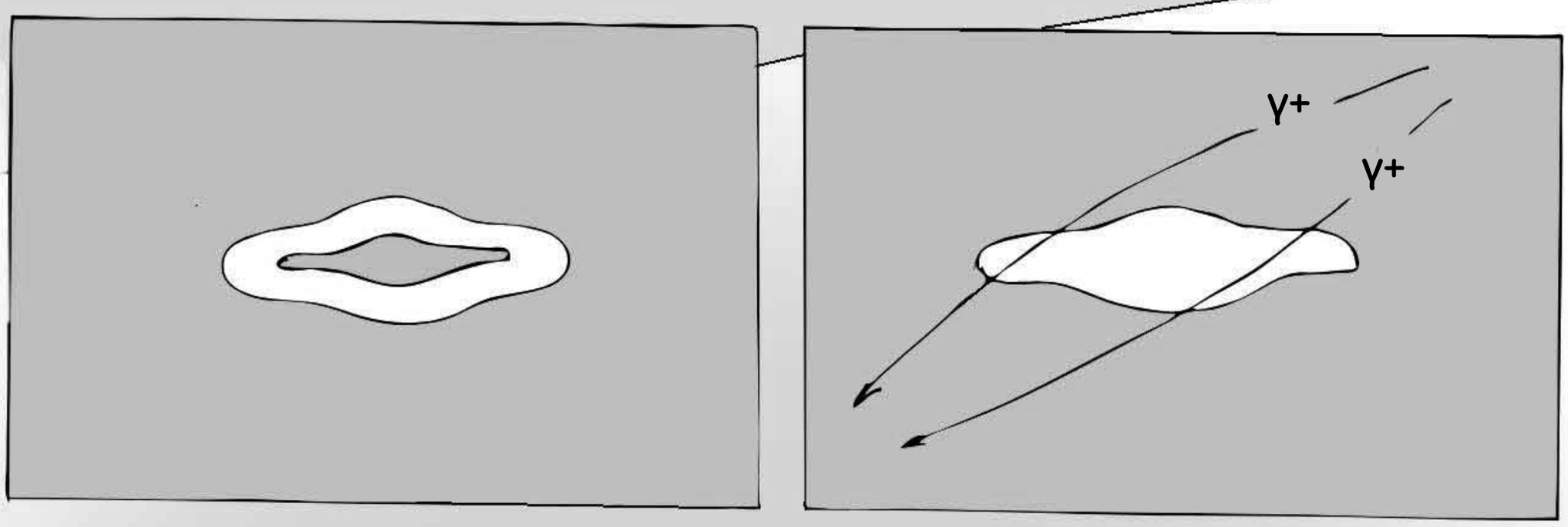


This negative pressure, introduced into the equation, provides an EXACT mathematical solution, which fits perfectly with the observation data.



G.D'Agostini and J.P.Petit : Constraints on Janus Cosmological Model from recent observations of supernovae type Ia, Astrophysics and Space Science (2018),363:139.https://doi.org/10.1007/s10509-018-3365-3

As masses of opposite signs are mutually exclusive, in the vicinity of the Sun, they are practically absent. So your first equation identifies with Einstein's equation, and your model agrees with all local verifications of GENERAL RELATIVITY.



As a gap in the negative mass distribution is the gravitational field equivalent of its inverted image, these gaps account for the strong gravitational lensing effects in the vicinity of galaxies and galaxy clusters.

What's missing?

While the identity of dark matter is hard to define, that of negative mass is luminous in its simplicity. They are simply copies of the components of ordinary matter whose mass has been inverted.

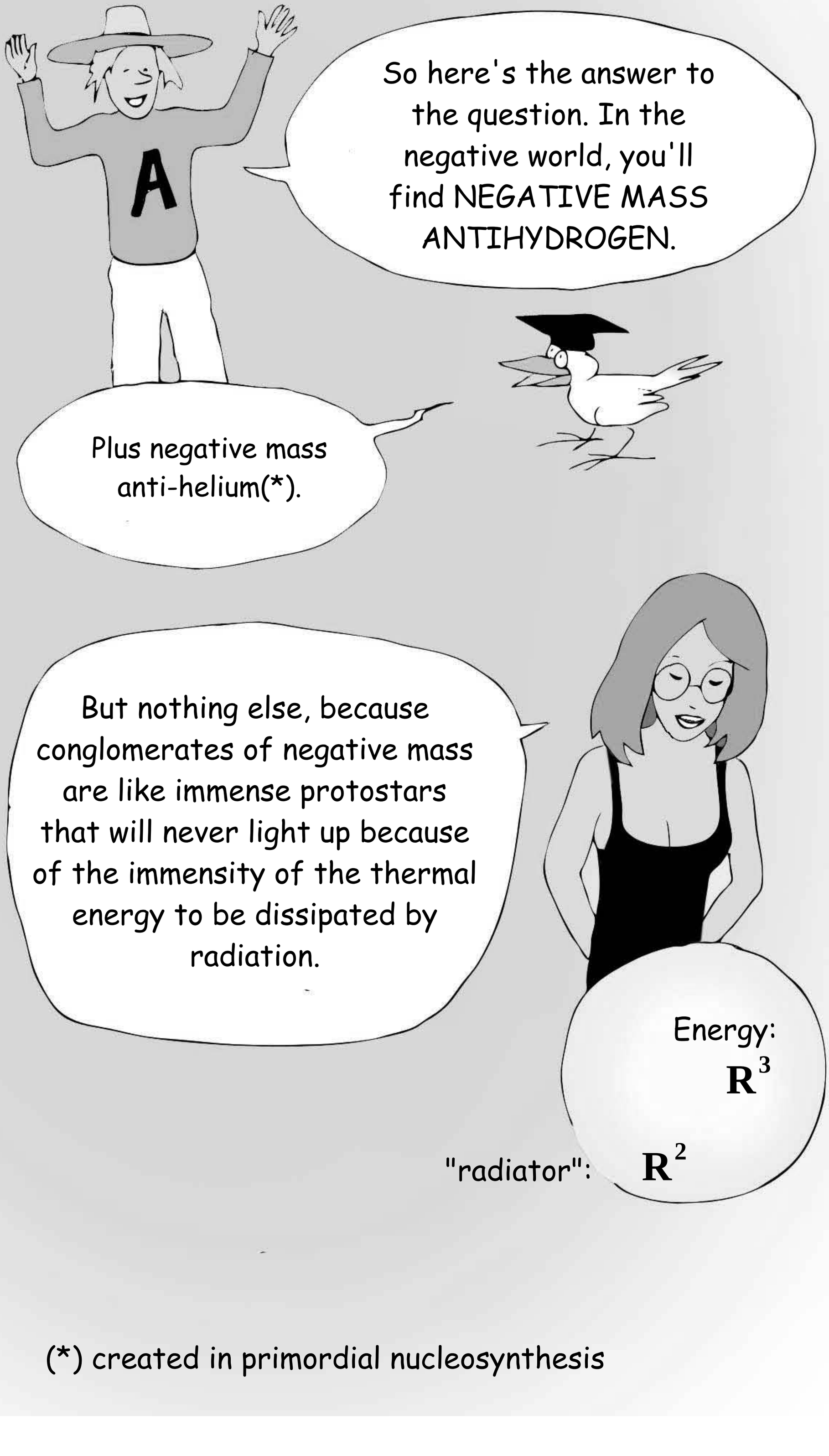
Matter-antimatter duality exists in the negative world. There is matter with negative mass and antimatter with negative mass.

THE IDEA OF RUSSIAN ANDREI SAKHAROV(*)

Positive-mass matter is created from QUARKS and antimatter from ANTIQUARKS.
He assumes that, from the BIG BANG onwards, the synthesis of matter was faster than that of antimatter in our side of the universe. After the fantastic matter-antimatter annihilation, only a small remnant of matter and positive-energy antiquarks remain in the positive world. Added to this are the many photons produced by annihilation. The situation is reversed in the negative world, where we'll find only negative-mass antimatter particles, negative-energy quarks and negative-energy photons from annihilations.

Direction

(*) 1967



(*) created in primordial nucleosynthesis

So, in this kind of history of our universe, no galaxies, no stars, no nucleosynthesis, no atoms heavier than helium, no planets, no LIFE.

But the JANUS MODEL is the only one that gives the invisible components of the universe a precise identity and resolves the paradox of the non-observation of the PRIMORITY ANTIMATIER.

If I understand correctly, in the JANUS universe there are TWO types of antimatter, one with positive mass and the other with negative mass.

Yes, that's right.

The antimatter created in the laboratory or in cosmic ray sprays has a positive mass and, in the CERN experiment, WILL FALL DOWN (*).

A

The other, which has negative mass and would "FALL UP", lies between the galaxies!

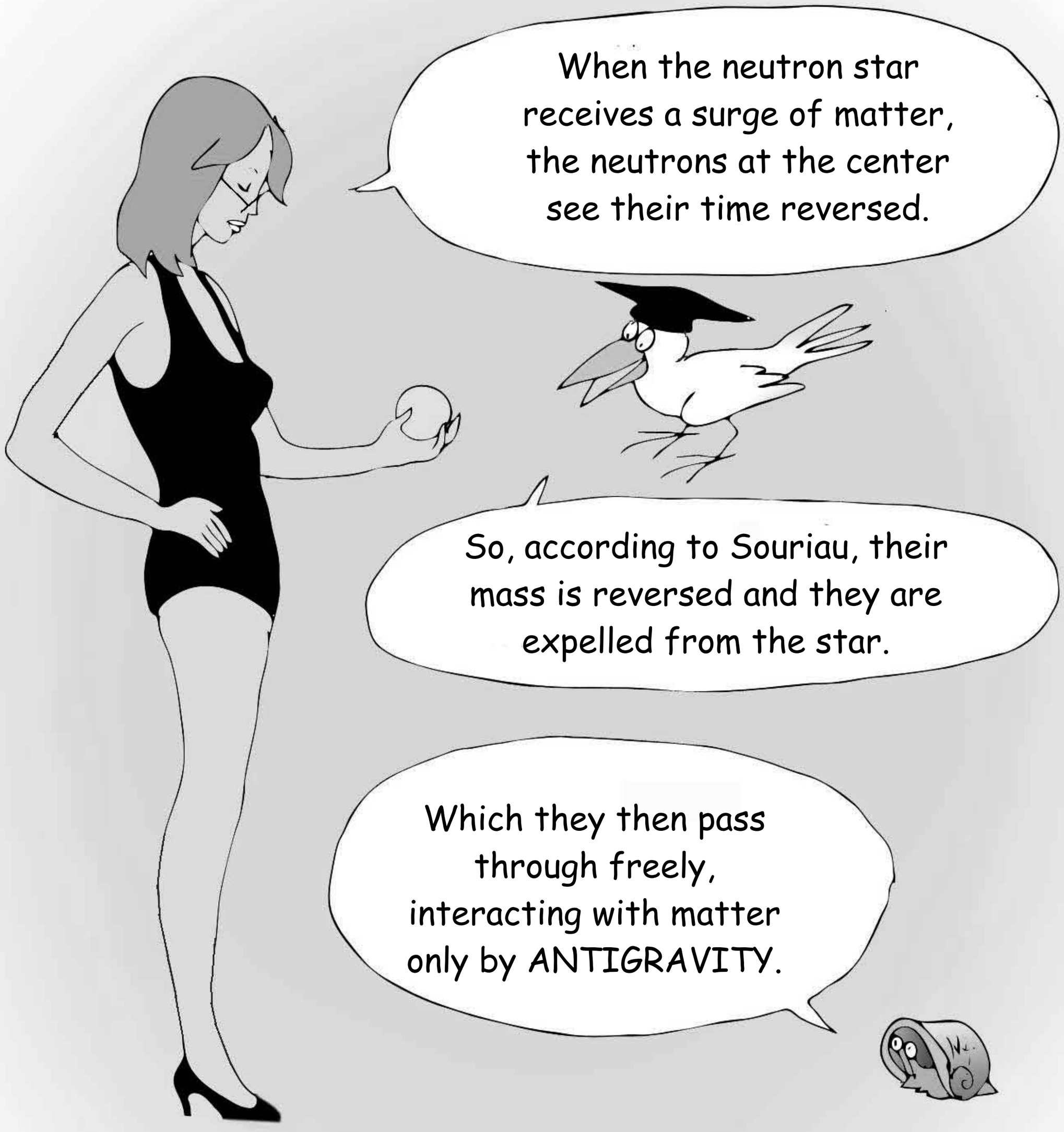
On page 35, you said that, according to Schwarzschild, when a mass of constant density ρ reaches a critical value (**), the pressure and speed of light tend towards infinity, which would, according to you, limit the masses of neutron stars to 2.5 solar masses. But many neutron stars are in close pairs with a companion star. They then pick up what it emits.

STELLA WIND

$$(**)\ M = \sqrt{\frac{c^2}{3\,\pi\,G\,\rho}}$$

(*) Announced by the author in 2017
Confirmed by CERN in 2023 (Nature)

PLUGSTARS



This process has been modelled geometrically, showing that the inverted mass is transformed into negative-mass antimatter.

Kip Thorne :

Wait, not so fast, Monsieur le Français. What happens when a massive star collapses onto an iron core much larger than two and a half solar masses?

or that two neutron stars merge and the sum of their masses is far greater than that. The result is BLACK HOLES.

For you, when the mass M is confined in a sphere of radius Rs= 2GM/c2 the object becomes a black hole. But you overlook what happens when this mass is inside a sphere of radius 2.25 GM/c2 (*) and, at the center, pressure and c become infinite.

(*) See Appendix

The excess mass then reverses and rapidly disperses. The phenomenon is accompanied by the emission of a very powerful gravitational wave. With your model, which completely ignores this phenomenon, this leads you to overestimate the masses of the merging objects, which you then equate with black holes of over a hundred solar masses that your theorists don't even know how to make.

Those French are annoying!

At most, it's the merger of two subcritical neutron stars, accompanied by the inversion of 2.5 solar masses, creating a gravitational wave of very high intensity.

Could we know a little more about the physics of this world of negative masses?

These two worlds, while similar at the microphysical level, are in fact very different.

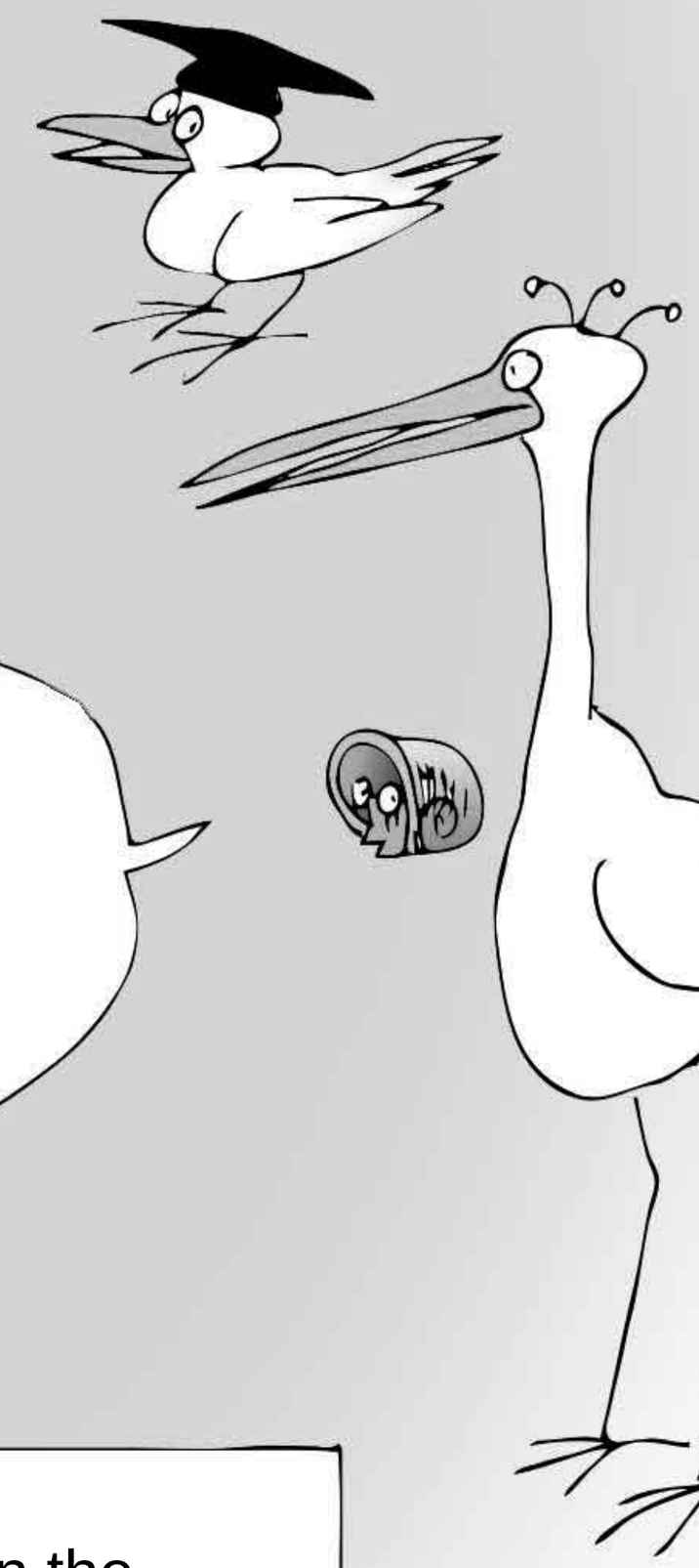
It starts with density, which is much higher and drives expansion.

What actually creates the gravitational field is not mass, but mc2 energy. Photons make their own contribution. Before 300,000 years have passed, this contribution is in the majority. This is what determines the geometry of the universe, its curvature.

In the same way that James Jeans demonstrated gravitational instability in matter (*), we can extend this concept to gravitational instability in a "photon gas", resulting in inhomogeneities and fluctuations in the local value of the radiation temperature over characteristic distances of the order of magnitude of a Jeans length LΛ .

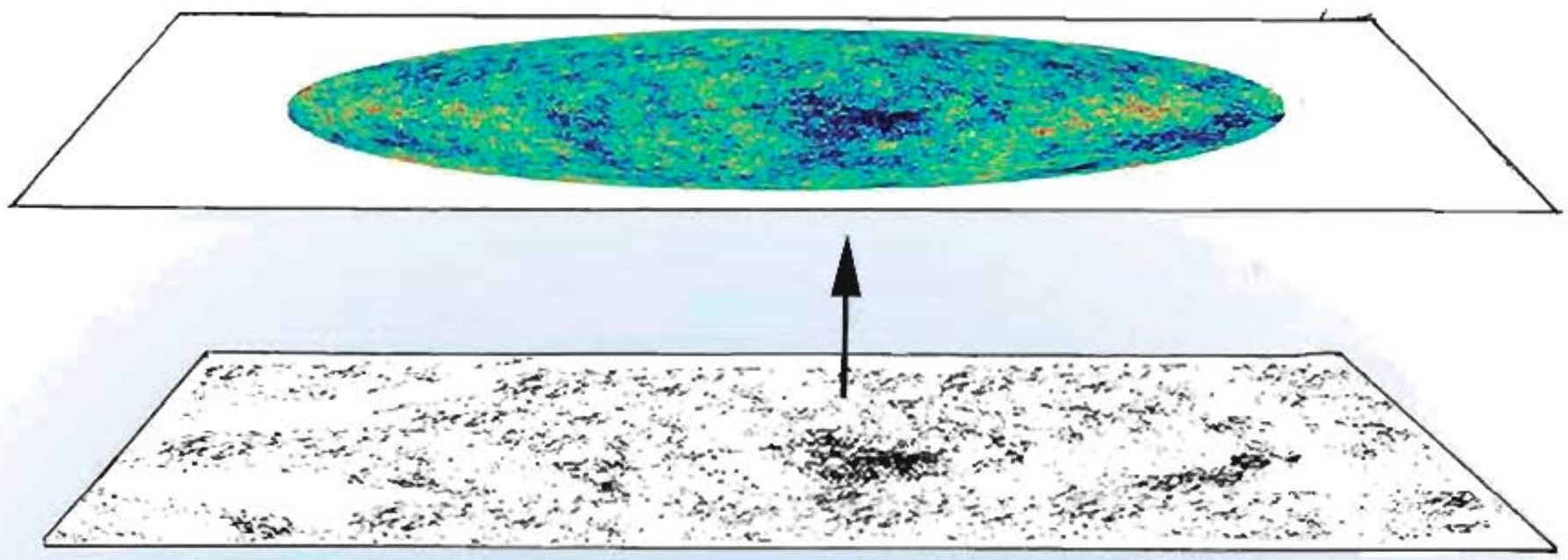
Direction

But there's a surprise in store. This length LΛ is then equal to the COSMOLOGICAL HORIZON. A distance covered by light in a time of the order of the age of the Universe.



This means that anything beyond the horizon cannot be observed. That's why astrophysicists have never tackled this question.

But this length Lphi- is much shorter in the world of negative masses.



It is these fluctuations in the negative world, in the radiative phase, that are reflected in the positive world, giving rise to fluctuations in the CMB(*).

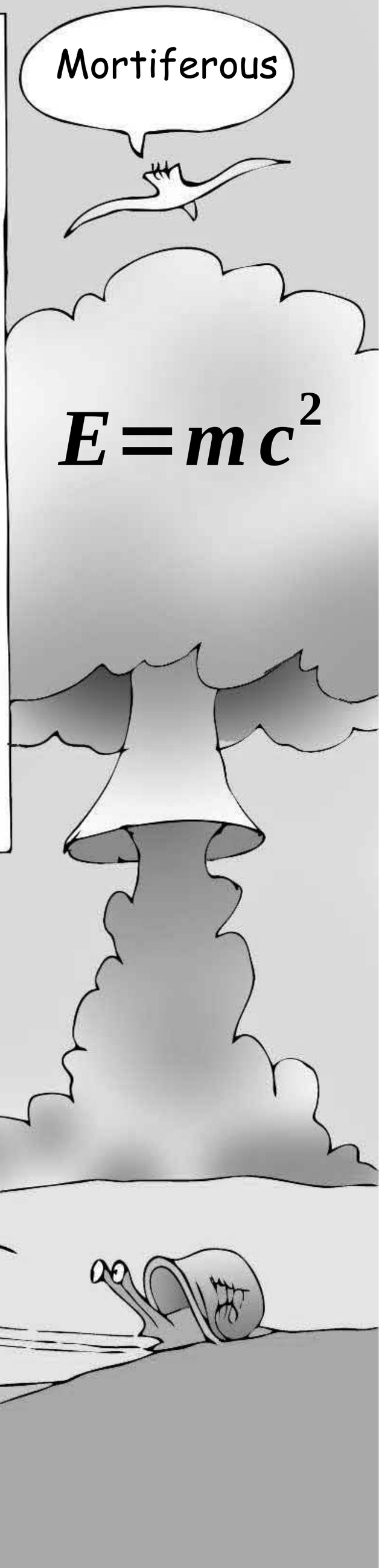
And it's these measurements of these fluctuations that make it possible to determine that lengths in the negative world are 100 times shorter, while the speed c- of movement of photons of negative energy c- is 10 times higher.

So a vehicle that managed to reverse its mass, traveling in the negative world, in this "reverse" of the universe, would see its travel time reduced by a factor of 1,000.

(*) For its general homogeneity, see the comic strip FASTER THAN LIGHT. DOXA interprets these fluctuations as gravito-acoustic waves.

EPILOGUE

Does that mean that this is the end of the story, that this new way of seeing things will be limited to explaining a few distant cosmic phenomena?
NO! RESTRAINED RELATIVITY began as a new vision of the geometry underlying physical reality(*). This had implications for physics, through the discovery of a NOYAL CHEMISTRY that we have exploited in EXO-ENERGETIC SELF-CATALYZING DISSOCIATION reactions.



(*) Space-time is a hyperbolic Minkowski Riemannian space:

$$ds^2=c^2dt^2-dx^2-dy^2-dz^2$$

The mass inversion that takes place at the heart of neutron stars is simply the natural version of a new mass manipulation that opens up a NEW PHYSICS.
With countless spin-offs, including..:

- Elimination of all waste
- Conversion of matter into antimatter (...)
- Interstellar travel

Experiments involving the inversion of the mass (*) of a small quantity of radioactive material are already conceivable without the use of science-fiction energies.

By injecting energy into nuclei with long-lasting metastable excited states, using very powerful magnetic fields created by MHD.

But how will humans use it?

*by sending it into the "negative world".

In the 1970s, the author developed the theory of hypersonic flight without shock waves (*).

You have to find your shock waves somewhere!

Absurd

In the eighties, using makeshift equipment, he annihilated VELIKHOV's ionization instability, the key to the implementation of hypersonic devices.

In 1983, he presented his work at an international MHD congress at his own expense.

(*)The comic strip THE WALL OF SILENCE is the popularized version of the theme (understandable even by a minister).

35 years later, taking up these ideas and work, the Russians created the first hypersonic missiles operating at Mach 10 in dense air and in silence, without supersonic "Bang".

If the shock waves were to form, these machines would have to withstand temperatures of 6,000°C.

In 2006, the Z-machine at SANDIA Laboratories in the USA, based on an idea by the Russian Smirnov, achieved more than two billion degrees. The author understands that this opens the way to "B+ 'H -> 3(4He) (*) fusion. He then led a crusade to develop this research in France.

END

Well, start by making us green bombs, then we'll see.

78 (*)Without neutron production, radioactivity generator

APPENDIX :

In 1916, Karl Schwarzschild constructed the geometry inside and outside a sphere of radius rn filled with an incompressible fluid of density p in the form of two METRICS.

An internal metric :

$$ds^2=\left[\frac{3}{2}\sqrt{1-\frac{8\pi G\rho r_n^2}{3c^2}}-\frac{1}{2}\sqrt{1-\frac{8\pi G\rho r^2}{3c^2}}\right]^2 c^2dt^2-\frac{dr^2}{1-\frac{8\pi G\rho r^2}{3c^2}}-r^2\left(d\theta^2+\sin^2\theta\, d\varphi^2\right)$$

An external metric :

$$ds^2=\left(1-\frac{8\pi G\rho r_n^3}{3c^2 r}\right)c^2dt^2-\frac{dr^2}{1-\frac{8\pi G\rho r_n^3}{3c^2 r}}-r^2\left(d\theta^2+\sin^2\theta\, d\varphi^2\right)$$

The outer metric is undefined for :

$$r\leqslant r_{cr\,geom}=\sqrt{\frac{3c^2}{8\pi G\rho}}$$

The inner metric is undefined for :

$$r\geqslant r_{cr\,geom}=\sqrt{\frac{3c^2}{8\pi G\rho}}$$

But what was overlooked by the designers of the BLACK HOLE model:

In his second paper, from February 1916, Karl Schwarzschild describes the geometry inside a sphere filled with an incompressible fluid of constant density ρ

Über das Gravitationsfeld einer Kugel aus inkompressibler Flüssigkeit nach der Einsteinschen Theorie.

Von K. Schwarzschild.

Sitzung der phys.-math. Klasse v. 23. März 1916. — Mitt. v. 24. Februar

It shows how to vary:

The pressure p :

$$p = \rho\, c_o^2 \frac{\cos\chi - \cos\chi_a}{3\cos\chi_a - \cos\chi}$$

La vitesse de la lumière :

$$V = \frac{2\, c_o}{3\cos\chi_a - \cos\chi}$$

To locate points inside the sphere, he uses an angle X. We switch to the r coordinate by simply changing the variable :

$$r = \sqrt{\frac{3\, c^2}{8\,\pi\, G\,\rho}} \sin\chi$$

The center of the sphere corresponds to X=0

For the surface of the sphere, this is X= Xa

The pressure at the center of the sphere is therefore :

$$p=\rho_o c_o^2\left(\frac{1-\cos\chi_a}{3\cos\chi_a-1}\right)$$

And the speed of light:

$$V=\frac{2c_o}{3\cos\chi_a-1}$$

Clearly, these two quantities become infinite if:

$$\cos\chi_a=\frac{1}{3}$$

That is, if :

$$r_a=\sqrt{\frac{c_o^2}{3\pi G\rho}}$$

Imagine a neutron star as a sphere filled with a fluid of constant density P.
Let's imagine it receives the "stellar wind" emanating from a companion star. Its radius ra will increase.
On page 79, the geometric solution describing the exterior reveals what we'll call a:

GEOMETRIC CRITICITY at : $r_a=r_{\text{cr geom}}=\sqrt{\frac{3c^2}{8\pi G\rho}}$

According to this diagram, the mass of a neutron star cannot exceed :

$$M_{cr\ geom} = \frac{4}{3}\pi \left(r_{\text{cr geom}}\right)^3 \rho$$

It then orbits around 3 solar masses.

But in this first ascent to criticality, where a neutron star sees its mass increase through the capture of the "stellar wind" emitted by a companion star, a PHYSICAL CRITICALITY arises when the star's mass reaches :

$$M_{cr\ phys} = \frac{4}{3}\pi \left(r_{\text{cr phys}}\right)^3 \rho$$

Then the value of the critical mass falls to:

Mcrphys = 2.5 masses solaires (*)

After the Second World War, the designers of the BLACK HOLE model ignored the conclusions reached in Schwarzschild's second article. Its English translation from German was not available until 1999.

> Some «black hole experts» don't even know ... it exists!

(*) In the (rare) cases where the mass of a neutron star has been directly determined, this is consistent with this constraint.

But there are two other ways of achieving criticality. The first is to consider the fusion of two neutron stars, if the sum of their two masses M1 + M2 exceeds critical values.

This fusion generates gravitational waves.
Calculations of the two masses in the case of M1 + M2 2.5 solar masses are correct.

But when these calculations result in :

$$M_1 + M_2 > 2,5 \text{ solar mass}$$

They are wrong, because the model ignores physical criticality at 2.5 solar masses.

The second scenario refers to the crushing of the iron sphere at the heart of massive stars (the focus of fusion reactions), with a mass M that may well exceed two and a half solar masses.

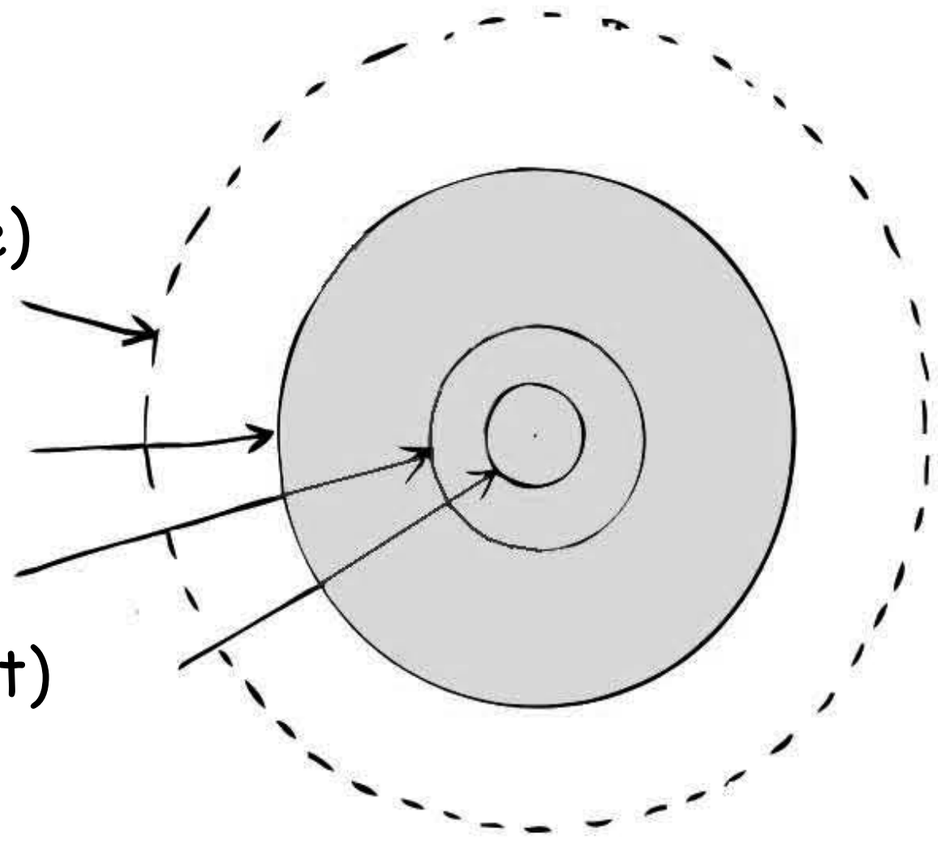
The rise to criticality then takes place at variable ρ, with conservation of mass M :

$$M = \frac{4}{3}\pi r_a^3 \rho = Cst$$

Here's the structure of the (massive) star before the Supernova phenomenon crushed the iron core:

We have the different radii:

$$\hat{r}=\sqrt{\frac{c^2}{3\pi G\rho}}$$ (variable)



r_a, star radius radius

iron core radius

"Schwarzschild radius (constant)

$$R_s=\frac{2GM}{c^2}$$

Physical criticality is reached when :

$$r_a=\hat{r}=\sqrt{\frac{c^2}{3\pi G\rho}}=\sqrt{\frac{c^2}{3\pi G}\frac{4\pi r_a^3}{3M}}=\sqrt{\frac{4}{9}\frac{r_a^3c^2}{GM}}$$

or when :

$$r_a=\frac{2.25GM}{c^2}>R_s$$

In the classic diagram, (geometric) criticality occurs when ra = Rs . But here, we can see that PHYSICAL CRITICITY occurs BEFORE GEOMETRIC CRITICITY occurs.

WHAT'S GOING ON?

When the star's radius tends towards the "Schwarzschild radius":

$$R_s = \frac{2GM}{c^2} = \sqrt{\frac{3c^2}{8\pi G\rho}}$$

the denominators of the dr2 coefficients in the outer and inner metrics become zero.

Consider a stationary observer (dr=0=dθ=dγ) located in the star. The metric becomes.

$$ds = c\,dt\left[\frac{3}{2}\sqrt{1-\frac{8\pi G r_a^2}{3c^2}} - \frac{1}{2}\sqrt{1-\frac{8\pi G r^2}{3c^2}}\right] = c\,d\tau = f(r)\,dt$$

where t is the OWN TIME experienced by this stationary observer. At the center of the star :

$$f(r) = c\left[\frac{3}{2}\sqrt{1-\frac{8\pi G r_a^2}{3c^2}} - \frac{1}{2}\sqrt{1-\frac{8\pi G r^2}{3c^2}}\right]$$

is the TIME FACTOR. At the center of the star :

$$f(0) = c\left[\frac{3}{2}\sqrt{1-\frac{8\pi G r_a^2}{3c^2}} - \frac{1}{2}\right]$$

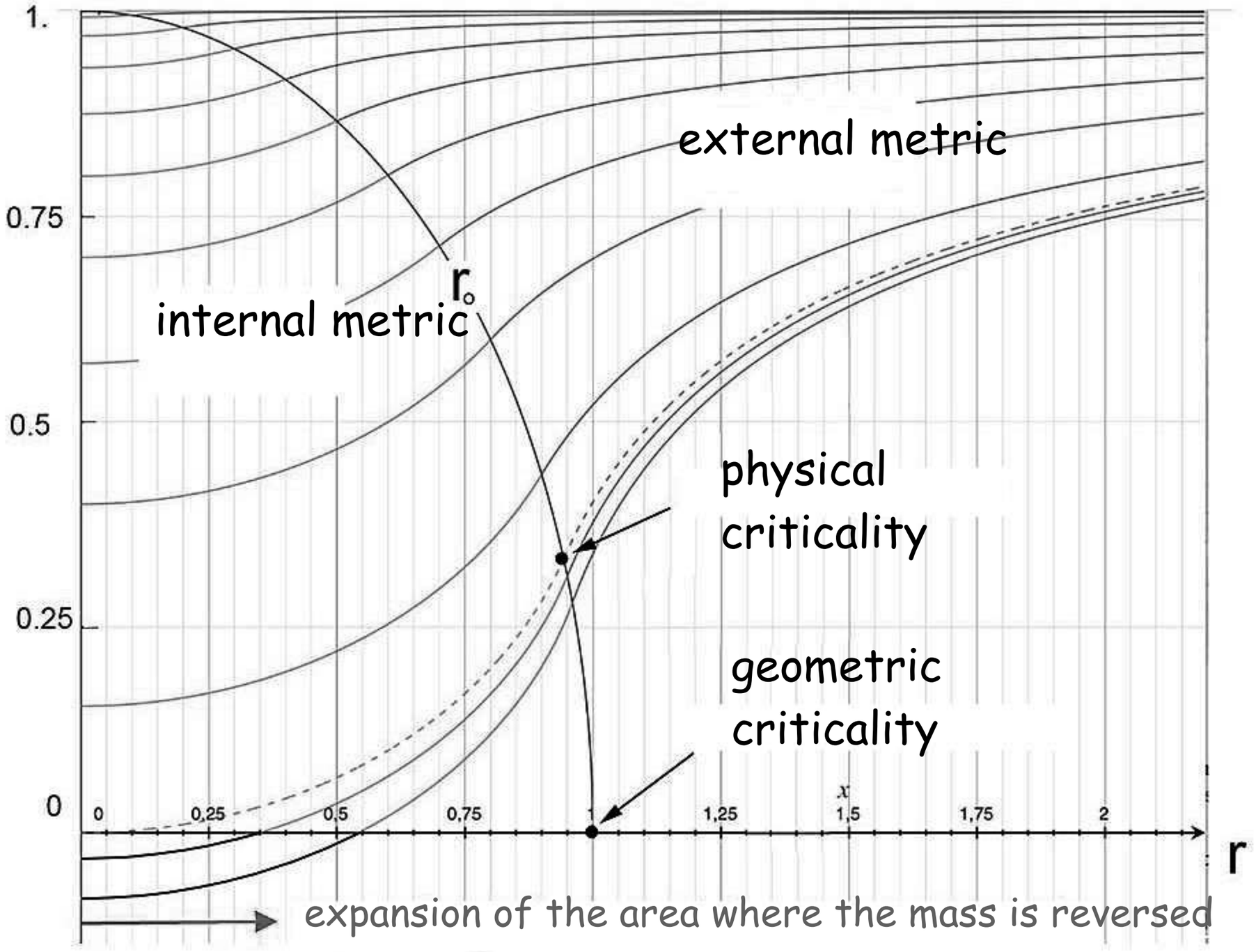
This term cancels out when :

$$\sqrt[3]{1-\frac{2GM}{c^2 r_0}} = 1 \rightarrow \boxed{r_a = \sqrt{\frac{8}{9}}R_s} = 0.943\,R_s$$

Thus, physical criticality goes hand in hand with the cancellation of the time factor in the internal metric.

Let's plot the f() function for different ratios

$$r = \frac{r_a}{\sqrt{\frac{8}{9}}Rs}$$



When f(r) < 0 appears a region in the center of the star for : $r_a > \sqrt{\frac{8}{9}}Rs$

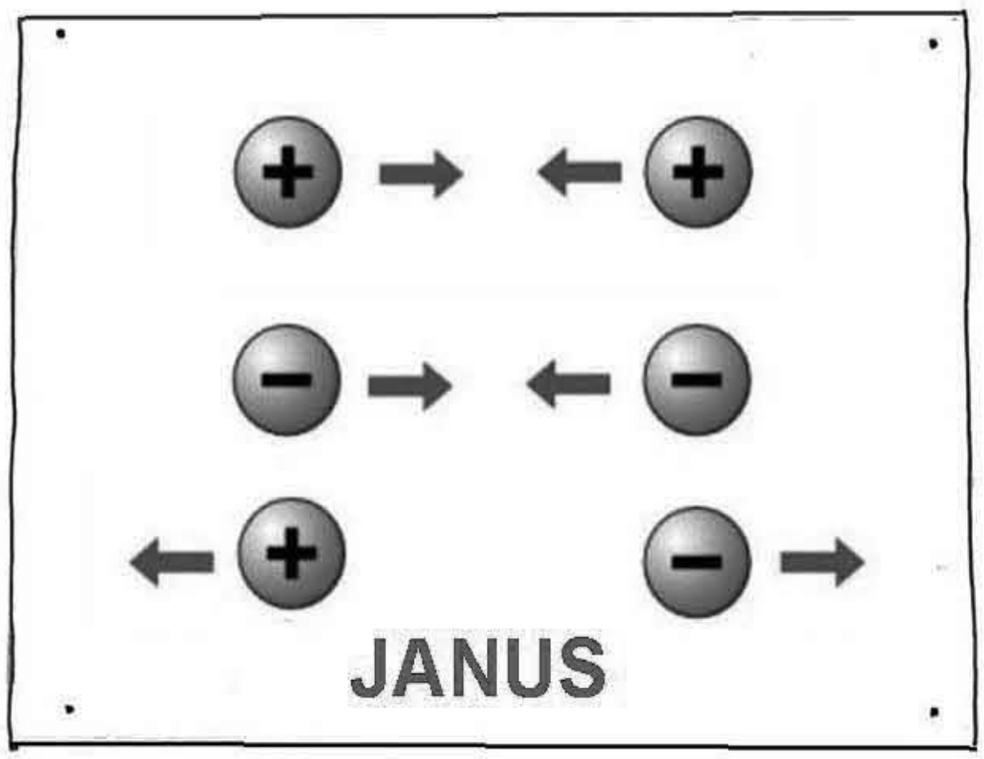
You can't "backtrack" along a geodesic. So ds so-=

Thus, where f(r) < 0 we have dt < 0

In this region, the TIME COORDINATE t is reversed. If we then opt for JANUS GEOMETRY, associating it with the work of mathematician JEAN.MARIE SOURIAU :

ENERGY AND MASS ARE REVERSED

Given the LAWS OF INTERACTION



These inverted masses, subject to the neutron star's gravitational field, will be expelled from the star. The mass of these neutron stars will then peak at 2.5 solar masses. They will then become :

PLUGSTARS(*)

Whether we're talking about 2.5-solar-mass neutron stars or the hyper-massive objects at the center of galaxies, the pressure at their core is mainly radiation pressure. As radiation pressure increases with the square of the speed of light, and light flies away in this region, the force of pressure alone can counterbalance the force of gravity, ensuring equilibrium.

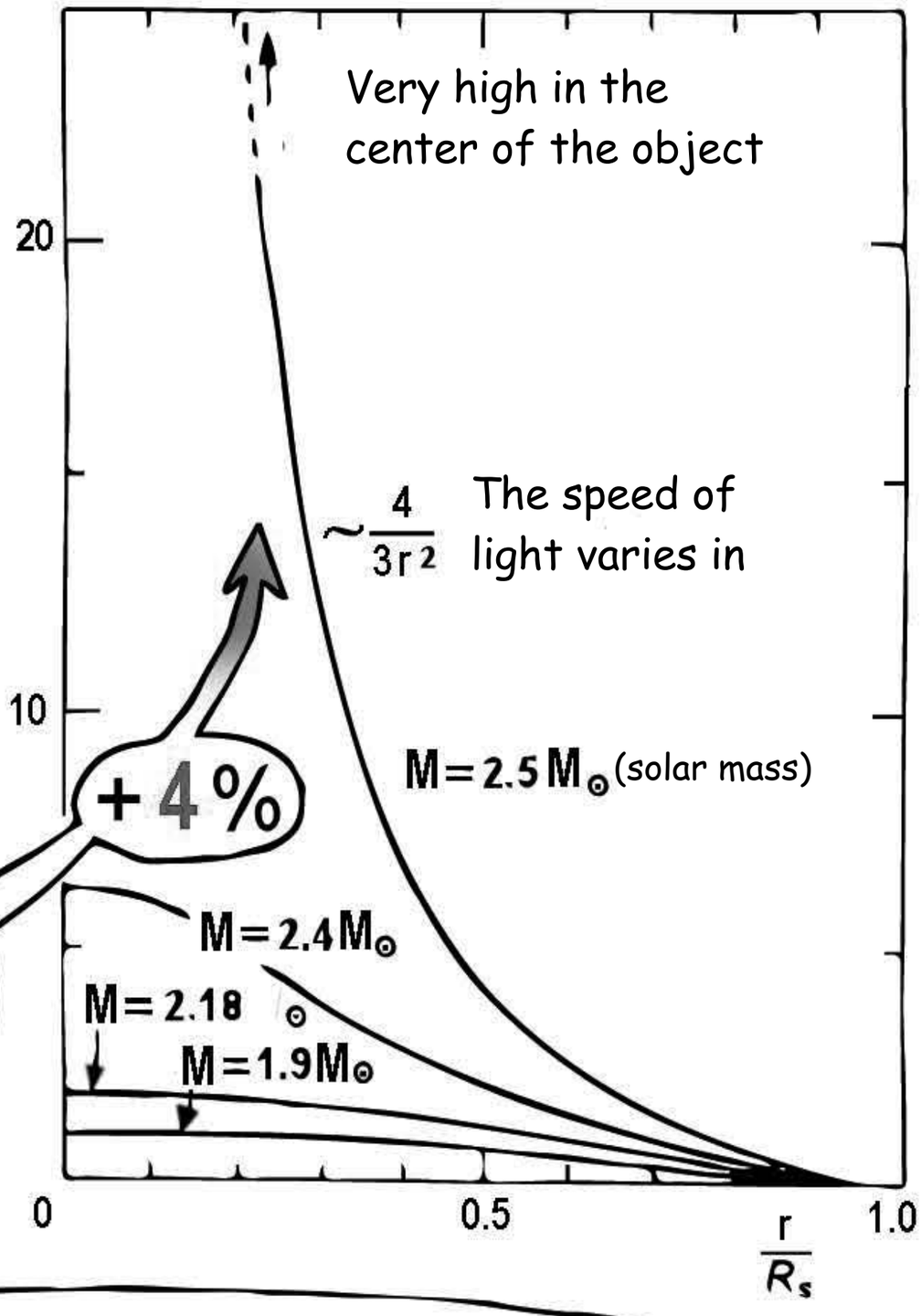
hypermassive objects at the center of galaxies are not "giant neutron stars"!

(*) From the English word "PLUG" meaning "BOND".

Is this soaring pressure in neutron stars a new concept?

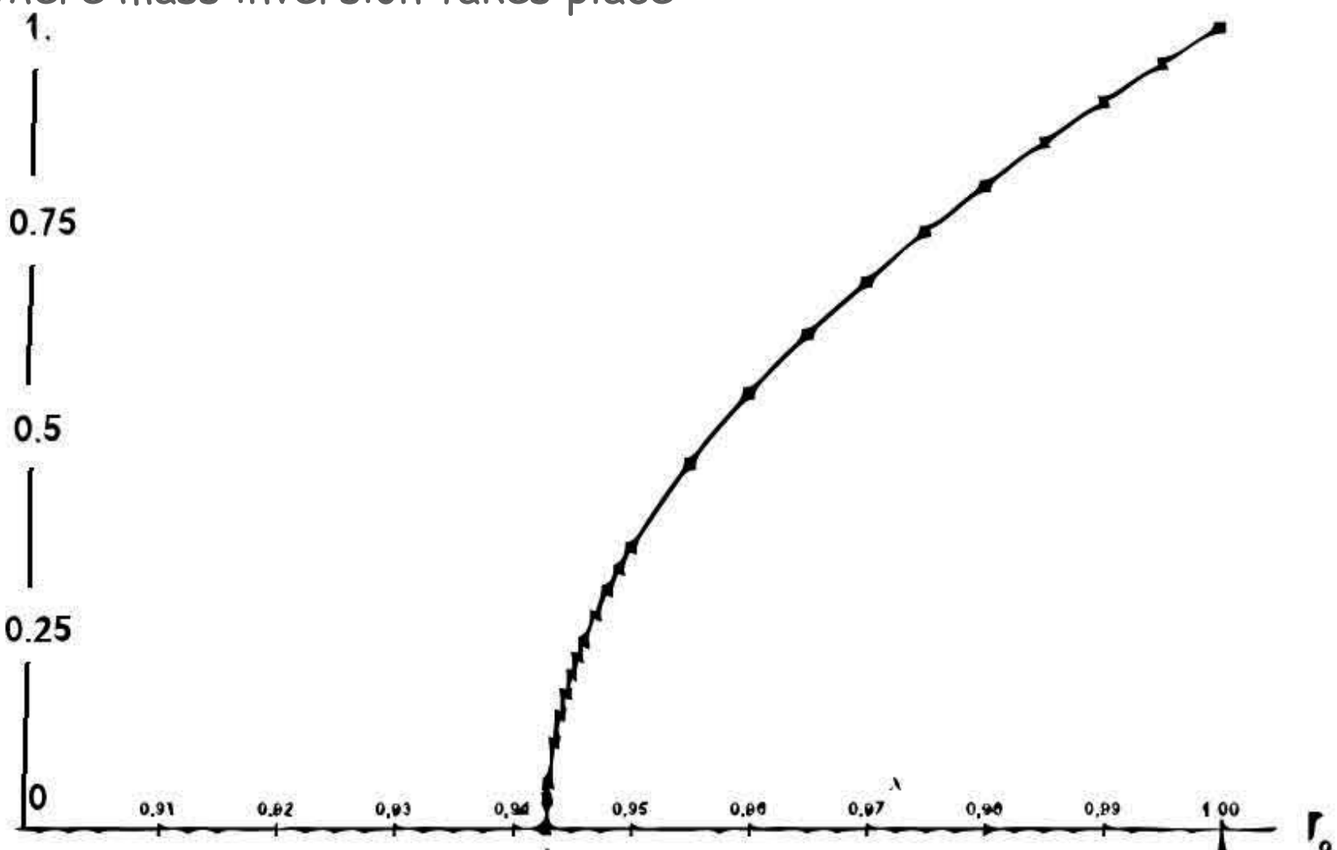
Not at all! It's in Schwarzschild 1916! It's even in the book GRAVITATION , by Wheeler, Thorne and Misner, page 611.

Pressure («GRAVITATION» p.611)

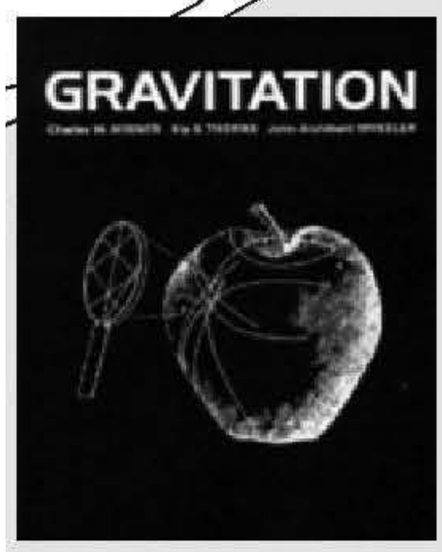


The system is self-stabilizing. When matter is added, an equivalent region opens up in the center of the object, where this mass is inverted and ejected from it.

Parabolic growth in radius of central sphere where mass inversion takes place



What you're telling us is that for over a century, thousands of researchers have paid no attention whatsoever to this second Schwarzschild paper. There must be a reason!



This excellent reason I found in GRAVITATION, the Cosmology Bible by Wheeler and Co, page 609. Here's the argument:

If we refer to the analytical solution of Karl Schwarzschild, 1916, which describes an object of constant density, this implies that the speed of sound (*) would tend towards infinity, and therefore exceed the speed of light, which is impossible and contradicts physics.

$$(*)\ v=\sqrt{\frac{dp}{d\rho}}$$

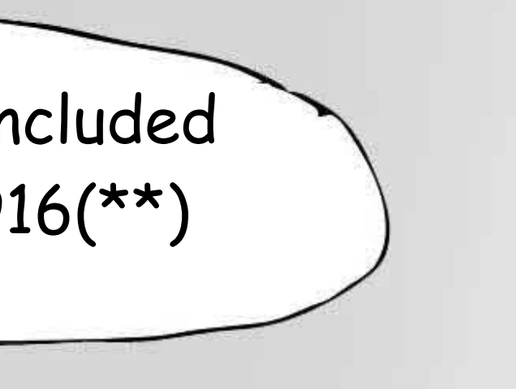
In neutron stars, as in hypermassive objects, pressure is RADIATION PRESSURE (*). Information travels at the speed of light c.

(*) , $p_r = \frac{\rho c^2}{3}$ for a gas it is : $\frac{\rho V^2}{3}$

And, at p Ponstant, if the radiation pressure is increasing, this means that the speed of light is increasing.

as Karl Schwarzschild concluded Karl Schwarzschild in 1916(**)

In those days, scientists were much freer in their minds than today's scientists, dumbed down by the formatting to which they are subjected.



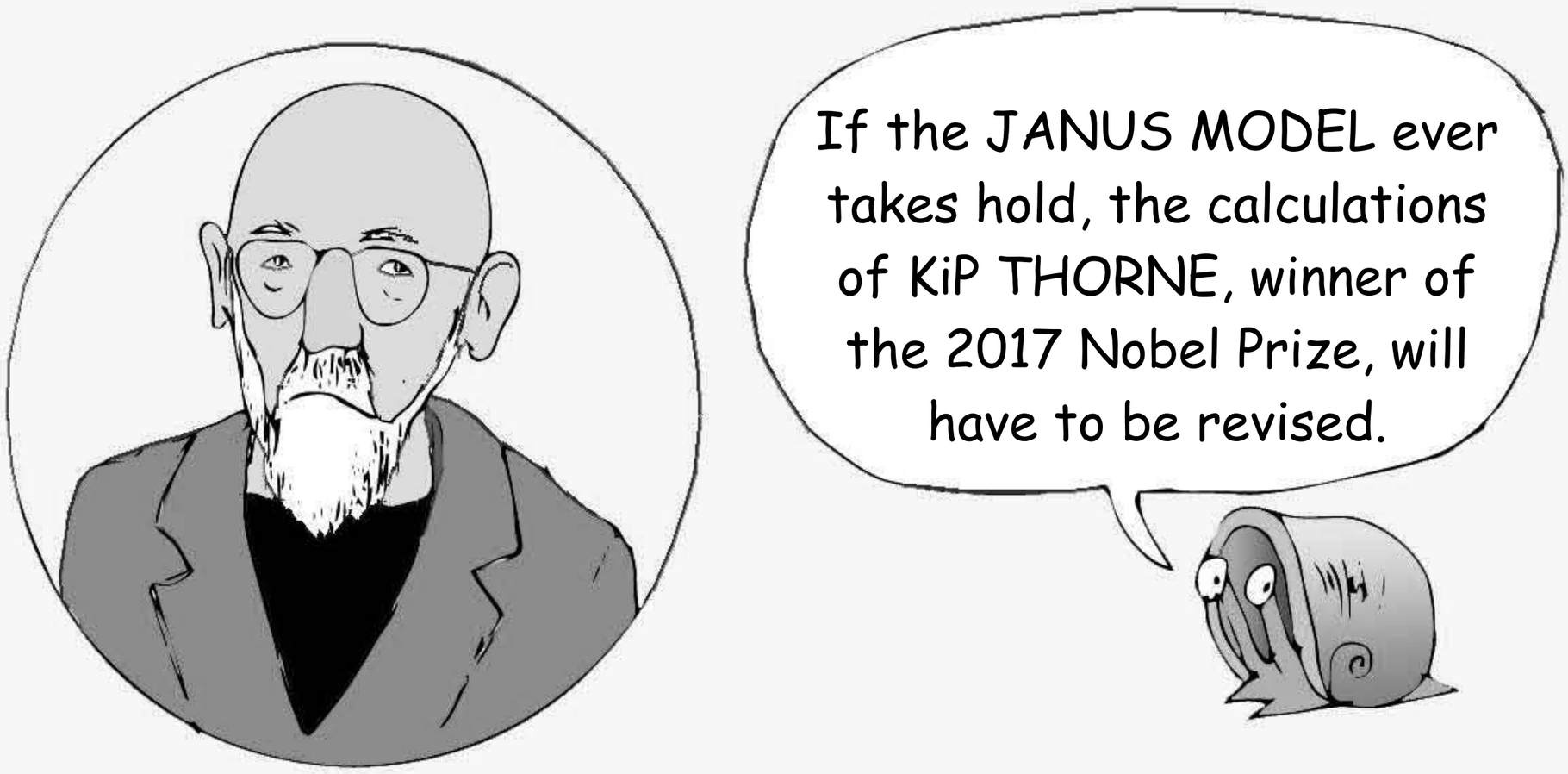
(**)See extract on page 28

They've had all this in front of them for over a century, but they refuse to see it!

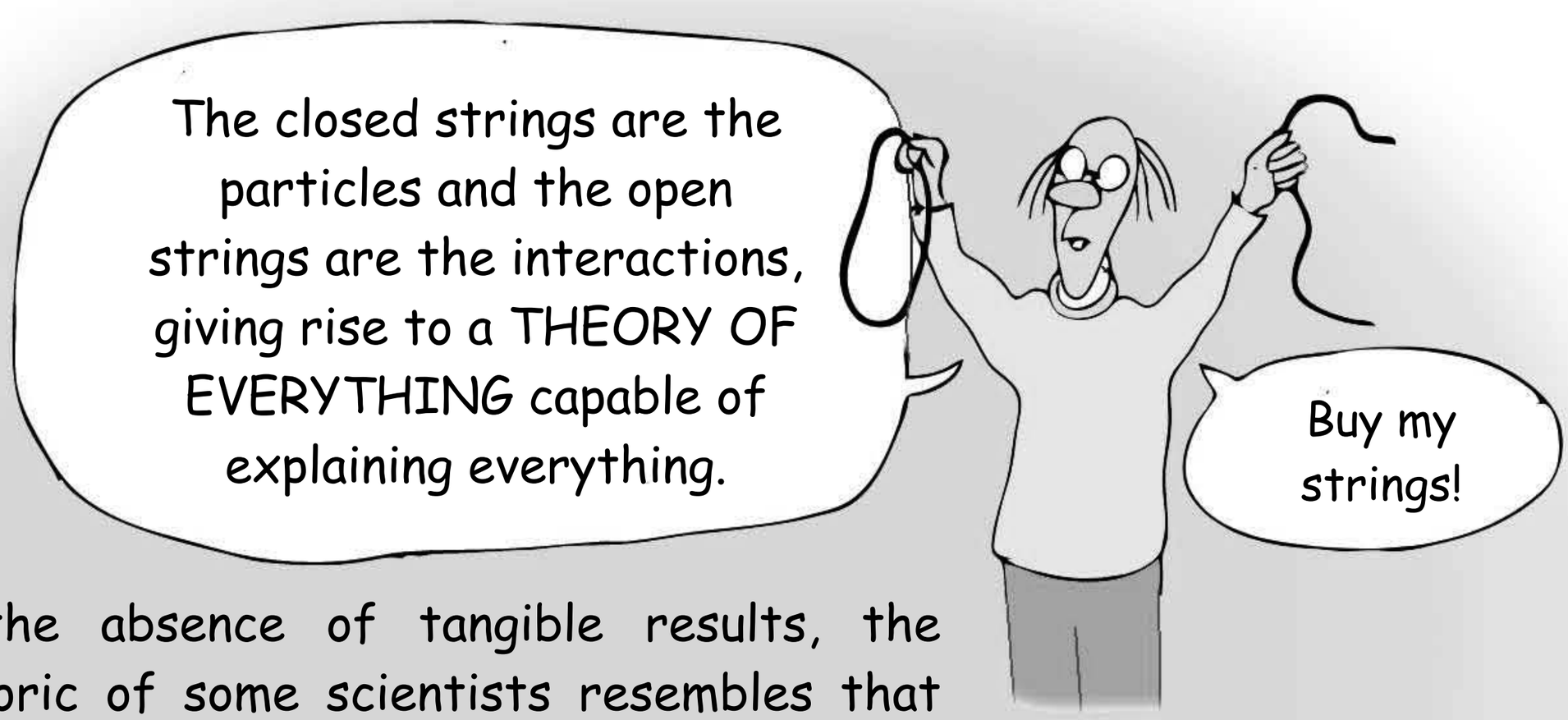
ALTERNATIVELY

There should be no neutron stars with masses exceeding 2.5 solar masses. Any higher values are due to observational biases. BLACK HOLES DON'T EXIST.

Pairs of neutron stars EXIST - These stars are gradually moving closer together as a result of energy loss due to the emission of gravitational waves.
Some of the signals recorded, when they correspond to the fusion of elements such that the sum of their masses is less than 2.5 solar masses, are correctly interpreted. Otherwise, these masses are overestimated, as the gravitational wave emission from mass inversion is not taken into account.

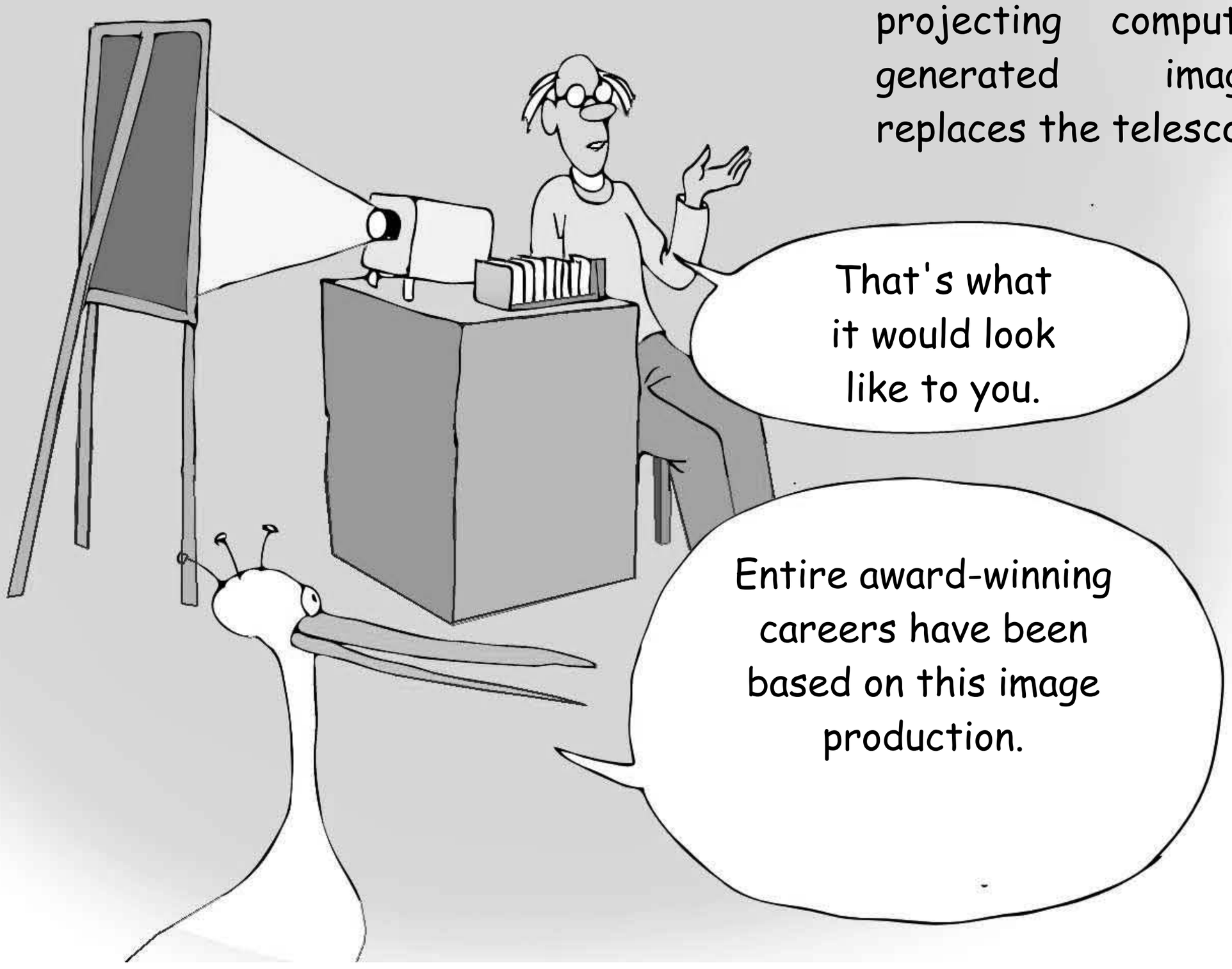


SCIENCE A NEW CONSUMER PRODUCT

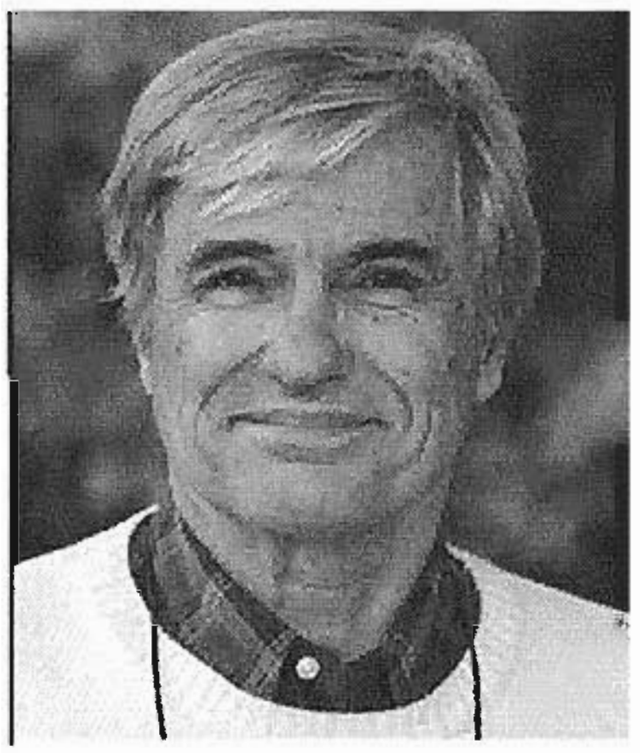


In the absence of tangible results, the rhetoric of some scientists resembles that of windbag salesmen at fairs.

The magic lantern, projecting computer-generated images, replaces the telescope.



The Adventures of Archibald Higgins



Decades have passed. Higgins and his companions, Max the blackbird, Léon the pelican and Tiresias the snail, realize that "the boss" has decided to "reactivate" them. But after years spent in the pages of the first albums, a "Dark Science" has emerged, presented to them by Aurélien, the rat. Sophie points out that the resulting model is increasingly contradicted by observations. So begins a fantastic adventure in which the emergence of a new model, the "Janus Model", an extension of Mr. Albert's model, solves the problems raised one by one.

Jean-Pierre Petit, born in 1937, who combines the qualities of a broad-spectrum scientist and a draughtsman, created this collection in 1977.

From the same author:

1 - Computer Magic
2- Flight of Fancy
3- Here's Looking at Euclid
4- Everything is Relative
5- The Black Hole
6- Big Bang
7- Run, Robot, Run
8- The Silence Barrier
9- The Economicon
10- Yours, energetically
11-Cosmic Story
12- A Thousand Billion Suns
13- For a Fistful of Amperes
14- Topo the World
15- The Chronologicon
16- The Logotron
17- Around the World in 80 Minuts
18- The Spondyloscope
19- Have a Nice Apocalypse
20- Cinderella 2000
21 – Vertical Passion
22- The scientific thousand and one nights
23- Amber and Glass
24- The Twin Universe
25- Faster than Light
26- Pyramids, the secret of Imothep.
27- Flighty Mechanics
28 -Janus Model versus Dark Science

These works, translated into 40 languages, can be downloaded free of charge from the website of the Savoir-sans-Frontières association, created in 2004 by the author and his collegue and friend, Gilles d'Agostini :

www.savoir-sans-frontieres.com/JPP/telechargeables/free-downloads.htm#english