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"This Universe Existed before The Big Bang" ft. Roger Penrose

"Tento vesmír existoval před velkým třeskem" ft. Roger Penrose

Beeyond Ideas

240 tis. odběratelů

550,444 views Premiere: 2. 11. 2023 #BigBang #Infinity I took up the commentary only on 31.05.2024 …; and I translated it into English on 28.05.2025

Let's unravel the mysteries surrounding (our) Big Bang. Was it truly the beginning of everything? ♾🔍 Want to support our production? Feel free to join our membership at https://www.youtube.com/BeeyondIdeas/... Special thanks to our beloved YouTube members this month: Poca Mine, Powlin Manuel, Gregory Stone, Lord, Saïd Kadi and Brad Clemmer 🚀🚀🚀 Experts featured in this video include Roger Penrose and Paul Steinhardt.

"Tento vesmír existoval před velkým třeskem" ft. Roger Penrose Beeyond Ideas 240 tis. odběratelů 550 444 zhlédnutí Premiéra: 2. 11. 2023 #BigBang #Infinity

Pojďme odhalit záhady kolem (našeho) Velkého třesku. Byl to opravdu začátek všeho? ♾🔍 Chcete podpořit naši výrobu? Neváhejte se připojit k našemu členství na https://www.youtube.com/BeeyondIdeas/ ... Zvláštní poděkování patří tento měsíc našim milovaným členům YouTube: Poca Mine, Powlin Manuel, Gregory Stone, Lord, Saïd Kadi a Brad Clemmer 🚀🚀🚀 Mezi odborníky v tomto videu patří **Roger Penrose** a **Paul Steinhardt**.

0:01
(01)- On September 1st last year a team of 16 scientists published a paper that shook the foundations of what we know about the universe they observed distant galaxies with the James Webb Space Telescope and discovered something utterly surprising the common understanding was that the Universe underwent rapid expansion before cooling down then the first stars and galaxies started to form during a time we called the Dark Ages but here's where scientists started scratching their heads these ancient galaxies looked as developed as our own Milky Way it's even much more mature than astronomers anticipated which could only mean one thing that they must have existed way before our galaxy now why is that a big deal apparently this finding of ancient galaxies is going to challenge our understanding of how the universe began there is a big bang but the big bang was not the beginning people tend to think that if you have a model in which it keeps on going in some sense and your big bang is not the beginning that you got to collapse back so a fundamental question arises is it time to reconsider what we think we know about the big bang and the origin of time before the early 1900s most scientists thought the universe was static and unchanging it means no expansion

no contraction or any other changes taking place but all that changed about a century ago astronomer vesto Slifer noticed some nebuli were moving away rapidly he first thought it was because of our Galaxy's motion but more observations from the Lowel observatory in Arizona didn't support this idea that's when Edwin Hubble stepped in he showed a clear pattern that the further away a nebula was the faster it moved away from us and what's more interesting is that these discoveries matched what general relativity predicted that SpaceTime could stretch or Shrink and so if we Trace back the universe's expansion using Einstein's equations we land on the idea that all space mass and energy were once squeezed into a tiny point a singularity we often hear that the Universe began with this Singularity followed by the explosive Big Bang if we think about it the scale of the universe is mind-boggling and the events just before the Big Bang are still a mystery now if everything started from that point what existed before it was there really nothing no space or time before the singularity in order to understand how the rewinding time went back billions of years ago let's consider this scenario think of our universe like the surface of any balloon here we have to introduce the concept of scale factor the scale factor is like a ruler to measure the balloon size right now our universe is blown up to a certain size which we call one scale factor but some time ago this balloon was only half as big now two dots will be drawn on this balloon so if we blow it up the dots move farther apart and that's the expansion we mean so in some future moments the scale factor for this balloon will be larger than one now think about letting the air out of the balloon slowly as you do everything on the surface comes closer together if you could completely deflate the balloon you'd have a tiny flat piece of rubber this is a bit like the singularity when the whole universe was very close together extremely hot and super dense if you extrapolate those equations back in time and try to predict what the conditions were at earlier times you come to a moment 14 billion years ago when the temperature and density become infinite but just when you feel you've grasped this bizarre notion it turns out the picture might not be so clear currently there's strong evidence suggesting we shouldn't take Einstein's equations all the way back to a singularity for instance observations hint at a time just before 10 to the - 32 seconds when the universe underwent a super fast expansion known as Cosmic inflation Cosmic inflation offers valuable insights into the universe's expansion at a vast scale it tells us why the universe looks so consistent and how galaxies came to be in a way it solves several puzzles in The Big Bang Theory but still The Singularity is a condition of intense density on a minuscule scale where Quantum forces play a vital role so just using general relativity alone we can't fully grasp the phenomenon of Singularity this early rapid expansion helps iron out issues with the Big Bang Theory we might need to rethink this whole big bang Singularity concept since it will probably reshape our understanding of cosmic inflation and the beginning of the universe so what truly unfolded at the start it turns out that the peculiar nature of the Big Bang Singularity suggests it might not be the whole picture mathematical singularities in a physical concept usually raise some eyebrows they often mean the theory has gaps or has been pushed to its limits and that's where we stand now we've rewound the

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(01)- On September 1st of last year, a team of 16 scientists published a paper that shook the foundations of what we know about the universe. They observed distant galaxies with the James Webb Space Telescope and discovered something completely surprising. According to the general understanding of the universe, they underwent a rapid expansion before cooling down. Then the first stars and galaxies began to form during a time we call the Dark Ages. But this is where scientists started scratching their heads. These ancient galaxies looked just

as evolved as our own Milky Way. They are even much more advanced than astronomers had assumed. Which could only mean one thing: they must have existed much earlier than our galaxies. Why is it such a big deal now that this discovery of ancient galaxies will challenge our understanding of how the universe began?. Unfortunately, physicists "understood" Hubble's results of the linear approximation up to the singularity, but they didn't understand that even Mr. Hubble could be wrong. The universe is not expanding (axially) but it is UNCOVERING…(!) in the early universe. In parts close to the origin of the universe, the curvatures are high: http://www.hypothesis-of-universe.com/docs/c/c_238.jpg ; http://www.hypothesis-of-universe.com/docs/c/c_239.jpg ; http://www.hypothesis-of-universe.com/docs/c/c_230.jpg ; there was a big bang, but there was no big bang beginners tend to think that if you have a model where it continues in some sense and your big bang is not the beginning, that you must collapse back. The fundamental question arises whether it is time to reevaluate **what we think we know about the big bang and the origin of time**. But you could have done that twenty years ago…when you read my HDV http://www.hypothesis-of-universe.com/docs/eng/eng_098.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_085.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_092.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_089.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_088.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_082.pdf ; and mode, and more http://www.hypothesis-of-universe.com/en/index.php?nav=home ; http://www.hypothesis-of-universe.com/docs/eng/eng_106.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_105.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_104.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_103.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_102.pdf ; http://www.hypothesis-of-universe.com/docs/eng/eng_101.pdf ; and more and more http://www.hypothesis-of-universe.com/en/index.php?nav=home

ing. Josef Navrátil, j_navratil@volny.cz ; phone: +0420 731 419 414; give. 10/09/2022

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Quote : John Wheeler was particularly interested in this question, and at that time there was an article written by two Russians **Licious** and **Kalatnikov** who seemed to prove that in the general situation you did not get a Singularity if there was some complicated //*whistling*//…

My 20 year old opinion: Big-bang = a jump change of state from pre-big-bang to big-bang, and finally to post-big-bang, as I describe and explain the emergence of "this" our universe with matter from the state of the Universe before the Bang, when there was a state of spacetime without matter…, it was infinite, flat, uncurved, without the flow of time and without the expansion of space (infinity does not expand). After the big bang, the zero curvature of 3+3 dimensions changes to an infinite curvature of dimensions. However, this infinite one sharply decreases to an "acceptable" curvature in the first two or three milliseconds. The environment is a "boiling vacuum, foam of dimensions" = plasma. **Curvature** of dimensions is then the PRINCIPLE of the structure of matter and physical fields and...and even together with the PRINCIPLE of alternating symmetries with asymmetries, it is a "dynamically changing universe" in which time is already running (three

time dimensions are being expanded), spatial dimensions are being expanded, and even laws must arise, new ones, which we can arrange in a sequence of a list of laws, rules and "mandatory systems"... as a thing collapses inward and somehow swirls outward again. In other words: infinite flat 3+3D space-time (before the bog-bang = before ***flick***), without matter, without the passage of time, without expansion, without laws, "collapses" by that "flick" (big-bang) by the way of "distortion of dimensions" into a "**final** locality" and from this state a new genesis of the Universe begins with matter, with the flow-flow of time, with the unrolling of space, interactions of elements of matter, etc. **Attention, I will correct myself**: That final locality of curved dimensions (our Universe…which began with that pseudo-singularity), then after its origin it still floats in that original flat infinite 3+3D space-time, the original Universe did not die, did not disappear. The pre-big-bang universe, that state of flat 3+3D space-time, is still everywhere, it is here "among us" and it is there a basic grid, a web, a grid, a network of non-curved dimensions 3+3, in which localities with curved dimensions float. (i.e. elementary particles, interactions, up to complex DNA, galaxies, stars, all 4 fields.) ⇓
End of the entry.

Before the beginning of the 20th century, most scientists thought that the universe was static and unchanging, that is, there was no expansion, contraction or other changes, but everything changed about a century ago when astronomer **Vesto Slifer** noticed that some nebulae were moving away quickly, at first he thought it was due to the movement of our Galaxy, but further observations from the Lowell Observatory in Arizona did not support this idea, and when Edwin Hubble stepped in, he showed a clear pattern, $\mathbf{v = H_0.d}$ that the further away the nebula is, the faster it is moving away from us and what is more interesting is that these discoveries were consistent with what the general theory of relativity predicted, that space-time could be stretched or contracted, and if then we are looking back **expansion**, but this is also "expansion" http://www.hypothesis-of-universe.com/docs/c/c_032.gif (but nonlinear. Here is an animation of the expansion "from a point", I couldn't find another "gif" on the internet) of the universe using Einstein's equations, we arrive at the idea that all the cosmic matter and energy was once compressed into a tiny point. Error… They point to a singularity that we often hear that the universe began with this singularity, but there could have been billions upon billions of singularities, they are all around us, there is an emergent emergence from the "foam of vacuum" of both time (three-dimensional) and space followed by an explosive Big Bang, if we think about it, the scale of the universe is staggering and the events just before the Big Bang are now still a mystery, the mystery is for you, for those who don't read HDV if everything started from that **point**, no it didn't start… what existed before it was, really nothing, wrong no space or time before the singularity, and that's wrong to understand how time rewinds back billions of years, let's consider this scenario **and imagine** our universe as the surface of any balloon, You finally imagine my vision Here are some websites related to **the big bang, and what came before it**.

english →

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which we need to introduce here the concept of scale scale scale is like a ruler to measure the size of a balloon right now our universe is inflated to a certain size which we call one scale factor but some time ago this balloon was only half that now there will be two dots drawn on this balloon so when we blow it up the dots will move further apart and by that we mean expansion so at some future point the scale factor for this balloon will be larger than you think right now about letting the air out of the balloon slowly when you do everything that comes close to the surface if you could blow the balloon up completely you would have a small flat piece of rubber it's a bit like a singularity where the whole universe was very close together extremely hot and super dense if you extrapolate these equations back in time and try to predict what the conditions were like at earlier times you get to a point 14 billion years ago where the temperature and density become infinite but just when you feel like you understand this bizarre concept, it turns out that the picture may not be so clear, there is currently strong evidence to suggest that we should not take Einstein's equations back to the singularity, for example observations indicate a time just before 10^{-32} seconds when the universe underwent a super-rapid expansion known as Cosmic Inflation. Why couldn't the vision of an "extreme collapse" of infinite dimensional curvature into a state of spacetime with "acceptable curvatures" be understandable in the time interval (I'll make it up) 10^{-45} sec. to 10^{-33} sec. ? Why not? Why do I have to believe in inflation with super-rapid expansion of the cp and you can't believe in super-rapid unrolling of spacetime curvatures ??? Cosmic inflation offers valuable insights into the expansion of the universe on a huge scale, telling us why the universe looks so consistent and how galaxies formed in a way that solves several puzzles in the Big Bang Theory, but still the Singularity is a state of intense density on Earth. ?? A tiny scale where quantum forces play a crucial role, so using only general relativity alone we cannot fully understand the phenomenon of the singularity, this early rapid expansion helps solve problems with the Big Bang Theory, perhaps **we will have to rethink this whole concept of the Big Bang singularity**, Hubble damaged people's thinking by mistakenly "inventing" the equation $\mathbf{v = H_0 \,.\, d}$ leading to one absolute singularity. That's wrong. The universe is expanding and so you (you clever mathematicians) have to invent another equation that will lead to a huge number of singularities (I'm afraid to say: an infinite number of singularities). Look into the microworld, at the Planck scale of **$c = 10^{-36}$ meters/10^{-44} sec.** and you will see there in that boiling vacuum that singularities are emerging all around us everywhere, at all points because they are likely to reshape our understanding of cosmic inflation and the beginning of the universe, so what really >unfolded< unwrapped in the beginning, it turns out that the special nature of the big bang singularity suggests that it may not be the whole picture, >mathematical singularities< in physics concept usually raise some eyebrows often, they mean that the theory has gaps or has been pushed to its limits, and that is where we stand now, when we rewind the fundamental question arises,

is it time to reevaluate what we think we know about the big bang and the origin of time before the beginning of the 20th century most scientists thought the universe was static and unchanging, that is, there was no expansion, contraction or other changes, but everything changed about a century ago astronomer **Vesto Slifer** noticed that some nebulae were moving away quickly, at first he thought it was due to the motion of our Galaxy, but further observations from the Lowell Observatory in Arizona did not support this idea, and when Edwin Hubble stepped in, he showed a clear pattern that the further away the nebula was, the faster it was moving away from us, And in doing so he fooled the thinking of physicists for 100 years, and what is more interesting is that these discoveries were consistent with what the general theory of relativity predicted, that space-time could stretch or shrink, and also "twist" and even multi-twisting is not forbidden dimensions http://www.hypothesis-of-universe.com/docs/c/c_029.jpg and if we trace the expansion of the universe backwards using Einstein's equations, we will arrive at the idea that all cosmic matter and energy were once compressed and this is again a wrong idea, because matter ||did not exist before|| the "compression" of space-time, but on the contrary: the compressed space-time (multi-curved dimensions) was the environment, the "medium" in which matter began to be born, by the mechanism of "packing dimensions into balls". http://www.hypothesis-of-universe.com/docs/c/c_045.jpg .These packets then floated in the plasma as elementary particles, to a tiny point, they point to a singularity that we often hear that the universe began with this singularity, followed by an explosive Big Bang, if we think about it, the scale of the universe is staggering and the events just before the Big Bang are still a mystery now, that is a mystery, but it would be one less mystery if physicists finally read the HDV if everything started from that point what existed before it was, really nothing, no space or time before the singularity, to understand how time rewinds back billions of years ago, let's consider this scenario and imagine our universe as the surface of any balloon, which here we have to introduce the concept of a scale scale, a scale is like a ruler to measure the size of a balloon right now our universe is inflated to a certain size, which we call one scale factor, but some time ago this balloon was only half that size, now there will be two dots drawn on this balloon, so when we blow it up, the dots will move further apart and by that we mean expansion, so at some future point in time the scale factor for this balloon will be larger than you think now about letting the air out of the balloon slowly, when you do everything that comes close to the surface, if you could blow the balloon up completely, you would have a small flat piece of rubber, it's a bit like a singularity, where the whole universe was very close together, extremely hot and super dense, if you extrapolate these equations back in time and try to predict what the conditions were like at earlier times, you get to a point 14 billion years ago where the temperature and density become infinite, but just when you feel like you've got this bizarre concept down pat, it turns out the picture may not be so clear, there is currently strong evidence to suggest that we shouldn't take Einstein's equations back to singularity, for example, observations indicate a time just before 10^{-32} seconds when the universe underwent a super-rapid expansion known as Cosmic Inflation. Cosmic Inflation offers valuable insights into the expansion of the universe on a vast scale, telling us why the universe looks so consistent and how galaxies formed in a way that solves several puzzles in the Big Bang Theory, but the Singularity is still a state of intense density on Earth. a tiny scale where quantum forces play a crucial role, so using general relativity alone we cannot fully understand the singularity phenomenon, this early rapid expansion helps solve problems with the Big Bang Theory, we may have to rethink this whole concept of a Big Bang singularity,

you've had this on my website for 20 years because it will probably reshape our understanding of cosmic inflation and the beginning of the universe, so what actually unfolded in the beginning turns out to be the strange nature of the big bang singularity suggesting that it may not be the whole picture, mathematical singularities in physics concept usually raise some eyebrows often mean that the theory has gaps or has been pushed to its limits, and that is where we stand now, having rewound http://www.hypothesis-of-universe.com/docs/c/c_051.jpg ⇓

two notation techniques of one Being

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(02)- universe using general relativity but this Theory isn't all-encompassing at the extreme densities and temperatures of the Big Bang Singularity general relativity clashes with quantum mechanics we're not really sure scientifically that there was a beginning to space and time in fact we've been exploring the idea that when you actually uh replace Einstein's theory with an improved theory of gravity that you'll find that the Big Bang was not the beginning that there existed space in time beforehand and in fact the key events that created the large scale structure of the universe and even all the galaxies and stars all those events actually occurred before the bang and uh we are only exist here because of those events sir Roger Penrose provided us with a new framework of thinking he asked us to imagine what or who's in this universe eventually if we fast forward time to Infinity who's in this universe eventually not us the black holes will all have evaporated Away by walking evaporation they swallow Galactic clusters what's left in the universe pretty well photons that the photons reach infinity without realizing without realizing anything funny has happened if you put it like that Infinity in this conformal picture is just like anywhere else so let's imagine that matter in the whole universe will eventually be dominated by photons as you might have realized from relativity the trouble with photons is that they don't feel the passage of time why you might ask let's break it down think of SpaceTime like a grid in the fabric of Cosmos we can measure Separation on this grid using the SpaceTime interval equation here the term toao is the time we feel and the term DS squ is a variable to measure the SpaceTime Gap or separation for us who are stationary our movement on this grid is all about time and not really about space I mean we're still traveling through time so the equation now becomes this it tells us that the separation the object travels in this combined SpaceTime world is just based on time this time distance relates to the speed of light and a special kind of time interval now if we had something that could teleport let's say in the X Direction its motion would be all about space so we're left with this equation which means two events in the SpaceTime grid that happen at the same time but at different positions in space but photons are truly unique they travel along a specific path known as null geodesics a route taken by anything moving at the speed of of light what's fascinating is that photons move in such a manner that they don't experience time or space they're instantaneous this is why their SpaceTime interval becomes d^2 equals to zero so imagine this you turn on a flashlight briefly and then turn it off the instant the light shoots out is event a and the moment it reaches a certain point away from the flashlight is event B the SpaceTime separation between these two moments is ds^ 2 equal 0 that's because the photon moves from A to B simultaneously cruising through both time and space in a way that they offset each other this unique way of moving means that photons lack a rest frame they don't possess a personal clock as the rest of us do so they never feel time passing by this special behavior matches up with a fundamental idea in physics that no matter where you are

or how you're moving light always moves at a consistent speed if photons had a stationary reference point it would have appear as if light isn't moving from their view this very fact contradicts our understanding of the speed of light also the equations governing light are the wonderful equations due to James Clark Maxwell aka the Maxwell equations these have a very interesting property it lies in the fact that the equation couldn't tell big from small the vastness of the universe or the smallest Quantum particles are all the same if we use these equations for instance if you have a system in which you've got some electromagnetic field and you could stretch this system to bigger or smaller it wouldn't notice the difference this phenomenon is called conformally invariant if you don't mind stretching or squashing then you could step outside this universe to another side to it so I want you to imagine the same thing here that You' got the big bang which is somehow stretched out to be a onetime surface but you could go before it this mathematical trick if you phrase condition on your Universe in this way you say you could extend to before then that is a way of characterizing the initial state of the universe as Penrose explained if we put the concept of an infinite Universe in this conformal picture every conceivable space is just like anywhere else for massless object because essentially it's only mass that knows the difference so although massless things might
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(02)- universe using general relativity, but this theory is not all-encompassing, at the extreme densities and temperatures of the Big Bang the singularity clashes with quantum mechanics, from a scientific point of view we are not really sure that there was a beginning of space and time in fact we have been exploring the idea that if you actually replace Einstein's theory with an improved theory of gravity, you will find that the Big Bang was not the beginning, I have been presenting this view for about 20 years http://www.hypothesis-of-universe.com/index.php?nav=aa when did space exist in time beforehand, and in fact the key events that created the large-scale structure of the universe and even all the galaxies and stars, all of these events actually happened before the bang and we are here only because of these events. Sir **Roger Penrose** gave us a new framework of thinking, asking us to imagine what or who is ultimately in this universe if we push time forward to infinity, who is ultimately in this universe not us, black holes all evaporate away by evaporating, absorbing galaxy clusters, what's left in the universe, pretty much photons, without which photons reach infinity awareness without you realizing it, something funny happened when you put it like that. Infinity in this conformal picture is the same as anywhere else, so let's imagine that the matter in the entire universe is eventually dominated by photons, as you might have realized from the theory of relativity that the problem with photons is that they don't feel the passage of time, O.K. and this is because they "travel" in flat spacetime at the same speed as expansion - the unrolling of global spacetime, grid, spacetime grid ... why you might ask let's break it down, imagine spacetime as a grid in the structure of the Cosmos, we can measure the separation on this grid using the spacetime interval equation here the term toao is the time we feel and the term DS squ is a variable to measure the SpaceTime Gap or separation for us who are stationary, our movement on this grid is all about time and not really about space. I mean, we're still traveling through time, so the equation now becomes this, it tells us that the distance an object travels in this combined space-time world is only based on time, this time distance is related to the speed of light and a special kind of time interval, if we had something that could teleport, say in the X direction, its motion would be all about space, so we're left with this equation, which means two events in the Space-Time grid happening at the same time but at different positions in space, but photons are actually unique, they travel

along a specific path known as the zero geodesic and the path captured by anything moving at the speed of light, the fascinating thing is that photons travel in such a way that they don't experience time or space, they are instantaneous, therefore their space-time interval d^2 is equal to zero, d=0, so imagine that. Briefly turn on a flashlight and then turn it off. The moment the light shoots out is event A, and the moment it reaches a certain point far from the flashlight is event B. The space-time distance between these two moments is ds^2 equal to 0. Because the photons move from A to B simultaneously, and they traverse both time and space in a way that compensates for each other, this unique way of moving means that photons lack a rest frame, they don't have a personal clock like the rest of us, so they never feel time passing. This strange behavior agrees with the basic idea in physics that no matter where you are or how you move, light always moves at the same speed. If photons had a stationary reference point, it would appear as if there was no light. From their perspective, this very fact contradicts our understanding of the speed of light, also the equations governing light are amazing equations thanks to **James Clark Maxwell** aka Maxwell's equations, these have a very interesting property, which is that the equation couldn't tell the big from the small, the vastness of the universe or the smallest quantum particles are the same, if we use these equations, for example, if you have a system in which you have some electromagnetic field and you could expand this system to a larger or smaller size, you wouldn't notice the difference, this phenomenon is called conformally invariant, if you don't mind stretching or squeezing, then you could step outside this universe to the other side of it, so I want you to imagine the same thing, you have a big bang that is somehow stretched to be a one-time surface, but you could go ahead of it with this mathematical trick, if you formulate the conditions in your universe in this way, you are saying that you could expand to that time, that is a way of characterizing the initial state of the universe as ***Penrose explained, if*** we insert the concept of an infinite universe into this conformal picture, every conceivable space is the same for an immaterial object as anywhere else, because essentially it is only matter that knows the difference, so even though immaterial things can it would take a thorough careful interpretation…

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(03)- perceive all spaces the same they lack the ability to Mark time this is when Einstein's theory helps us track when the universe starts started Einstein told us that energy and mass are basically two sides of the same coin but another important equation came from Max plank who said that energy and frequency are linked E equals HF if we put these two equations together we realize that mass and frequency are connected this means anything with mass like a rock or an Apple has its own beat or Rhythm and so without mass we wouldn't have a clock or time in the end penrose's argument eventually leads uses to this that the very remote future is indistinguishable from a big bang when the universe has become basically empty except for photons it would be as though it had transitioned into a new Big Bang phase our universe's future could become another universe's beginning this concept often referred to as conformal cyclic cosmology challenges conventional ideas about the beginning and end of our universe if you're thinking about a cyclic model it was conceptually wrong in the first place it's conceptually wrong because the picture Focus has you turn your focus to the scale factor and what I want to argue is that you really want to have your focus on the Hubble radius because if you talk about what makes a universe cyclic what you mean is that from cycle to cycle the universe should look the same if we're looking at the model the Hubble parameter shows how quickly the universe expands initially the universe was a super tiny ball just 10 to Theus 25

cm and this ball bounced very high powered by a whopping energy of 10 to the 15th gev as it rises the speed eventually slows down and so does the universe's expansion when it descends the Hubble parameter drops back and the universe shrinks back to 10 to Theus 25 cm but just like throwing a ball into a trampoline the moment right before the ball lands there's going to be a push this is our universe's dark energy and in our case it causes a contraction the nudge from the Dark Energy makes the universe keeps expanding again and and again in a continuous cycle this phenomenon mirrors the conformal cosmic cosmology model which says that the Universe keeps expanding and Contracting in a cycle and more generally what we're trying to do is make a theory which is complete and tight where the past the present the future are all interlocked to get a feel for this you have to think about the seemingly simple concept of now in our day-to-day lives we experience time as a continuous flow but it can also be useful to think of time as a sequence of moments or snapshots everything that happens can be thought of as the unfolding of moment after moment and after moment now picture these moments lined up every Earthly moment and every event in the entire universe this would capture every occurrence that has ever happened or will ever happen every place in space and each point in time from the start of our big bang to Star formations in the Milky Way to the birth of planet Earth about 4 and 1/2 billion years ago and even to big events this summer all these events happening simultaneously but in different places Define our sense of now you can picture them on a single slice of SpaceTime let's call it a now slice we'd like to think we all agree on what's happening right now Moment by moment but Einstein showed that strangely when you take motion into account this Common Sense picture of time goes out the window if you think the region of SpaceTime from this cyclic cosmology model we realize that there are different ways to cut this region to represent the individual now slices and from special relativity we know that someone who is moving will have a different conception of what's happening right now and so the way they'll intersect this region of SpaceTime will be at a different angle it won't be parallel to our version of slices picture an entity in a Galaxy 10 billion light years from Earth and way over here we have a person reading a newspaper if the two are sitting still their clocks tick off time at the same rate and so they slice the same now sheet but now see what happens when this entity moves away from Earth the entity's now slice cuts through the region differently it means that the entity's present moment on Earth skips back a millennium to times when vikings sailed the Seas or when the Great Pyramid of Giza was built if this entity moves toward Earth its now slice leans into Earth's future by about a few thousand years it might Glimpse events like Humanity reaching a type 2 civilization level or perhaps colonizing another galaxy anyhow this concept of time slicing is especially important when we consider again the case with photons there now includes the past present and future simultaneously just as we believe that all space exists
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(03)- they perceive all spaces equally, they lack the ability to mark time, that is when Einstein's theory helps us track when the universe began. Einstein told us that energy and mass are essentially two sides of the same coin, but another important equation came from Max Plank, who said that energy and frequency are linked E equals hf, if we put these two equations together, we realize that mass and frequency are linked, that is, anything with mass, like a rock or an apple, has its own rhythm or beat, and so without ~~mass~~ - mass it would ultimately have no clocks or time, Penrose's argument ultimately leads to the very distant future being indistinguishable from the big bang, so we have to realize "Big Bang from the left and Big Bang from the right". From the "left" it is a state of flat infinite space-time,

without matter, without the flow of time and without the expansion of space, then from the "right" it is an infinitely curved space-time (whose curvatures drop literally by a huge collapse), in which the construction of elementary particles begins by "packing dimensions", the flow-flow of time begins, the expansion of space begins, four forces are set (gravity, electromagnetism, strong and weak) and the "life" of the microworld with linear interactions begins, and the life of galaxies and stars with gravitational behavior. Etc., when the universe essentially empties, from the "left" except for photons it would be as if it were transformed into a new Phase of the Big Bang. The future of our universe could become the beginning of another universe this concept often referred to as conformal cyclic cosmology challenges conventional ideas about the beginning and end of our universe, if you think about the cyclic model, first of all what was conceptually wrong, it is conceptually wrong because in the Focus picture you are focusing on the scale factor and I want to argue that you really want to focus on the Hubble radius, and ren is wrong because spacetime is unrolling "according to" some involute http://www.hypothesis-of-universe.com/docs/c/c_032.gif and even emerges at every spacetime point of the microworld, the vacuum… because when you talk about what makes the universe cyclical, you mean that from the cycle of the universe cycling should look the same if we look at the model, Hubble parameter shows, is wrong http://www.hypothesis-of-universe.com/docs/c/c_239.jpg ; how fast the universe is expanding, initially the universe was a super tiny ball of just 10 to Theus 25 cm and this ball bounced very high powered by a tremendous energy of 10 to 15. GEV as it increases the speed eventually slows down and so does the expansion of the universe as the Hubble parameter decreases it drops back down and the universe shrinks back to 10 to Theus 25 cm but just like when you throw a ball on a trampoline just before the ball hits there is a push this is the dark energy of our universe and in our case it causes a contraction the nudge by dark energy causes the universe to expand over and over again in a continuous cycle this phenomenon mirrors the conformal universe ?? maybe he just wants to fix Penrous and HDV to merge… a cosmological model that says the universe is constantly expanding and contracting in a cycle and more generally we are trying to create a theory that is complete and tight where the past, present and future are all connected so you get the idea. we need to think about a seemingly simple concept now, in our daily lives we experience time as a continuous flow, the movement of a material subject along the time dimension (time does not flow to us, but we to it)… but it may also be useful to think of time as a sequence of moments or snapshots everything that happens can be thought of as unfolding moment by moment and moment by moment now represents these moments lined up every earthly moment and every event in the entire universe, this would capture every event that has ever happened or will ever happen, every place in the universe and every point in time from the beginning from our big bang to star formations in the Milky Way to the birth of planet Earth about 4 and 1/2 billion years ago and even for the big events this summer, all these events are happening simultaneously but in different places.., this may or may not be true. If we make a cut – a cross-section through the entire universe to a “stop-state”, space-time will be differently curved (time and space dimensions), that is, each location (bounded location) has “its own pace of time passing”, i.e. “its own curvature of length” (galaxies, stars, black holes, solar systems). I am talking about the macroworld. But the microworld, QM interactions of elementary particles is different, there the passage of time “does not follow” one arrow of time, it is a “pulsation” of time forward and backward. (After all, in interactions there are elements - packages of collapsed dimensions, i.e. many and multi-repeatedly curved). Even Prof. P. Kulhánek himself expressed such a vision of the microworld.

Define our sense of the present, which you can imagine is on a single slice of space-time, let's call it the slice now, we'd like to think that we all agree on what's happening right now moment by moment, but Einstein showed that strangely, when you take into account motion, this common sense picture of time disappears. window, if you think of that region of space-time from this cyclical cosmological model, we realize that there are different ways to slice that region to represent individual slices, and we know from special relativity that someone who's moving is going to have a different idea of what's going on. and so the way they will cut through this region of space-time will be at a different angle, it will not be parallel to our version of the slices depicting an entity in a Galaxy 10 billion light years from Earth and far away we have a person reading a newspaper, if the two of them are sitting, their clocks tick at the same rate, and so they are cutting through the same sheet, but now look what happens when this entity moves away from Earth, now the slice of the entity cuts through the region differently, that is, the present moment of the entity on Earth will jump back a millennium to the times when the Vikings sailed the seas or when the Great Pyramid of Giza was built, if this entity moves towards Earth, its present slice will tilt into the future of Earth by about a few thousand years, it may glimpse events like Humanity reaching a Type 2 civilization level or perhaps colonizing another galaxy, anyway this concept of time slicing is especially important when we consider again the case of photons which now they encompass the past, present, and future simultaneously, just as we believe that the entire universe exists.
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(04)- so does all of time everything that has ever happened or will happen it all exists somewhere and sometime from Andy Warhol introducing pop Arts to the world to the end of the Cold War from our first time riding a bike to events that are yet to happen on other planets it all has its place in the tapestry of SpaceTime this idea is just like what Einstein mentioned some decades back that the distinction between past present and future is only an illusion no matter how persistent they might look is time Universal in other words is there an audible Tick Tock throughout the Galaxy a Master Clock so to speak they answer my friends is no time is not absolute so let's recap where we stand now Penrose says that the Universe restarts endlessly from the big explosion to the next round but it means it is even harder to track the beginning or ending of The Big Bang in this cyclic model and so in this intricate Cosmic Landscape we catch a glimpse of the Intriguing possibility where our universe is constantly growing and creating new universes within itself most of space would be this stuff which is continuing to inflate and then it would produce Quantum fluctuations that continue the inflation further while may be producing other patches where inflation ends and this would continue literally eternally and we call this eternal inflation when combining quantum physics with gravity and introducing inflation the outcome is eternal inflation in this scenario most of space is always inflating with pockets where inflation has ceased and due to Quantum fluctuations some of these areas resemble our universe While others don't an infinite number might appear like ours but an equally infinite number will not the this leads to the idea of a Multiverse where every conceivable event or scenario will occur infinitely given the universe's physical ingredients with such infinite possibilities the probability of a patch resembling our universe is astronomically low recent events have cast doubt on some aspects of this idea in March 2014 the bicep 2 group from Antarctica claimed to have detected Cosmic gravitational waves some touted as the conclusive proof of inflation however it was later revealed that the The observed waves were not Cosmic in origin but patterns created by light passing through the dust of our galaxy instead of proving inflation this discovery raised

more questions recent findings have set stringent limits on gravitational waves excluding many simple inflationary theories this led to a renewed focus on the foundational assumptions of The Big Bang Theory some theorists are now revisiting the idea of the big bounce an alternative to the Big Bang in this model the univers is smoothing and flattening don't result from a high energy random Quantum origin instead it emerges during a Time resembling our present where classical physics dominates this model proposes that the Universe undergos periods of slow contraction instead of Rapid expansion eliminating the Multiverse concept caused by random Quantum fluctuations during inflation the big bounce Theory also has its predictions it suggests a universe devoid of cosmic gravitational waves because of the absence of energy concentration multiple experiments are ongoing to determine the presence or absence of these waves another significant component of this theory is the idea of a cyclic Universe where the universe undergoes periodic bounces this proposition is currently being tested through experiments and observations the findings from these studies will not only determine the origins and future of the universe but will also establish the relationship between gravity and quantum physics these discoveries will shape our understanding of the universe's nature if the Multiverse theory is correct our observable universe might just be a random occurrence detaching us from understanding its fundamental creation but if the bounce theory is right our observations would represent the universe as a whole giving insights into its fundamental laws these upcoming experimental results will have profound implications on our comprehension of the
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Cosmos
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(04)- Likewise, throughout all time, everything that has ever happened or will happen, everything exists somewhere and sometime, from **Andy Warhol** introducing pop art to the world to the end of the Cold War, from our first bike ride to events that are, despite happening on other planets, everything has its place in the tapestry of Space-Time, this idea is the same as what Einstein mentioned a few decades ago, that the distinction between past, present and future is only an illusion, no matter how persistent they might seem, time is Universal, in other words, there is an audible Tick Tock throughout the Galaxy and the Master Clock, so to speak, my friends answer, time is not absolute, so let's recap where we stand now. **Penrose** says that the universe restarts infinitely many times from the big bang to the next round<, Well, well, O.K. - I'm not against this idea. (There won't be a complete agreement between HDV and Penrose, though). Because his idea strongly supports HDV, basically in the sense that the universe "before the Big Bang" is a two-dimensional 3+3D space-time, without matter, without the passage of time, space is infinite and... and the big bang is a realistic change of the state of flat space-time to the opposite extreme, i.e. extra curved space-time, which in this "stop-state" begins the unrolling of dimensions, thus the passage of time occurs, the expansion of space occurs, the realization of matter - elementary particles by "packaging" (!) by packing dimensions and the genesis of particle compactification as the interaction of elements and conglomerates. Space-time not only unrolls into the "macrouniverse of a network of galaxies", http://www.hypothesis-of-universe.com/docs/c/c_457.jpg ; http://www.hypothesis-of-universe.com/docs/c/c_240.jpg but, (be careful, perceive it as the unrolling of global space-time in which localities of cp are "simultaneously" packed into multiple curved fibers = galaxies and stars), but there is also a simultaneous packing of dimensions on smaller and smaller scales and scales of the microworld... there is a warping of

dimensions for the construction of increasingly complex and complex matter + physical fields. There is even a grmrtujesposlubnost of the implementation of laws, rules, principles, etc. - This universe is "three-dimensional" and its genesis reaches "somewhere to the end" by gradual unrolling of dimensions until it is again "flat, uncurved", the dimensions are smoothed out (thus the matter dissolves), and it is ready for Big-Bang No. 2; see Penrose's idea. But he has no idea about my cyclical nature and the structure of the universe.
but that means it's even harder to trace the beginning or end of the Big Bang in this cyclical model, and so in this complex cosmic landscape we glimpse a fascinating possibility where our universe is constantly growing and creating new universes but, phew, most of the space inside itself. there would be this stuff that keeps inflating, and then it would produce quantum fluctuations, no need that continue inflation further, while they can produce other patches where inflation no need for inflation either, ends, and that would go on literally forever ??? and we call it eternal inflation when we combine quantum physics with gravity and **introduce**, phew, .. Are you introducing inflation to the Universe, or is the Universe envious of you physicists?? inflation results in eternal inflation, phew in this scenario most of space is always inflating with pockets where inflation has stopped and due to quantum fluctuations some of these regions resemble our universe while others do not have an infinite number that may seem like ours, but an infinite number does not lead to the idea of a multiverse where every conceivable event or scenario will play out infinitely, given the physical ingredients of the universe with such infinite possibilities, the probability of a blob resembling our universe is astronomically low, recent events have cast doubt on some aspects of this idea in March 2014 the biceps 2 group from Antarctica claimed to have detected cosmic gravitational waves, which were promoted by some as irrefutable evidence of inflation, however it was later shown that the observed waves were not of cosmic origin, but patterns created by light passing through the dust of our galaxy instead of proving inflation this discovery raised further questions, recent findings have placed strict constraints on gravitational waves eliminating many simple inflationary theories, O.K. which has led to a refocus on the basic assumptions of the Big Bang Theory, some theorists are now reconsidering the idea of the Big Bang.
Unfortunately without the HDV model, which they haven't read, and have no idea about…
The Bounce Alternative to the Big Bang in this model smooths out the universe and the flattening is not the result of a high-energy random quantum origin, but instead occurs at a time resembling our present, where this model is dominated by classical physics, proposing that the universe went through periods of slow contraction instead of rapid expansion eliminating the concept of a Multiverse caused by random quantum fluctuations during inflation The Big Bounce Theory. The theory also has its predictions. It proposes a universe without cosmic gravitational waves due to the absence of energy concentration. Numerous experiments are underway to determine the presence or absence of these waves. Another significant component of this theory is the idea of a cyclic universe, where the universe undergoes periodic reflections. this proposal is currently being tested through experiments and observations. The findings from these studies will not only determine the origin and future of the universe, but also establish the relationship between gravity and quantum physics. These discoveries will shape our understanding of the nature of the universe. if the Multiverse theory is correct, our observable universe may be just a random phenomenon that separates us from **understanding its fundamental creation**, but if the reflection theory is correct, our observations will represent the universe as a whole and provide insight into its

fundamental laws. These upcoming experimental results will have a profound impact on our understanding of
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the cosmos.
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JN, 07.01.2024