

<https://www.youtube.com/watch?v=XSCrSkK2HcQ>

What Was The Big Bang?

177 379 zhlédnutí

17. 4. 2021

(Comments and my opinion is in red)

(01)- In the wood-paneled chapel of the catholic university of louvain in belgium a priest lights a candle and kneels before the statue of christ for his daily devotion his name is georges lemaitre and it is 1927. as he rises his eyes wander to the towering windows that line the chapel's walls and to the stars twinkling in the early evening light he smiles in distant reflection imagining the sequence of events that brought that starlight to the belgian sky but despite his faith lumetra's beliefs were lacking a creator so fundamental to the catholic doctrine he had no need for divine intervention when it came to the making of the universe no seven-day miracle instead he saw it as a natural consequence of natural laws and processes proved by mathematics and visible in the movements **of the heavens themselves his extraordinary** * (idea, thought, even without mathematics ahead of time) **insight would earn him two nobel prize** nominations for george lemaitre was more than just a catholic priest he was also a theoretical physicist a cosmologist fascinated with the workings of god's perfect universe it was here in naivan that he began work on a theory that would come to shape our **modern understanding of the cosmos** all based on the remarkable observation that space seemed to be expanding mathematics had laid out the history of the universe and now lemaitre traces it backwards **in his mind's** (not on the paper above the equations) eye he imagines a time before humans or indeed any living thing inhabiting the earth before that of course the earth must have formed as a barren rocky ball around the glowing sun before that the sun ignited in a blaze of nuclear glory crushed into being by the irresistible force of gravity in a vast cloud of gas and dust that gas and dust was a consequence of many generations of stars living and dying before our own igniting fusing elements and exploding in terrific supernova that spread their elemental waste products across the cosmos **he imagined** (not on the paper above the equations) a time before these many lineages of stars before the chemical complexity that we enjoy when only hydrogen and helium floated inert in a lightless universe **if** space is expanding now **then** in the reverse chronology of lemaitre's mind it is **contracting or collapses – blames** there would be a point in this dark gassy cosmos before the first star when all the matter in the universe was compressed into a vastly smaller space atoms would become packed so tightly that even photons are unable to pass through there are no light sources here but it doesn't matter the universe is utterly opaque when the contracting reversed universe crushes down even further the atoms themselves are crushed first into subatomic particles and then into pure energy in this small dense universe there is only radiation here **even lumetra's imagination begins to falter** the universe can become even smaller even hotter but what happens then lumetra pushes the unanswerable from his mind content in having grasped 13 billion or so years of cosmological history and unperturbed by the mysteries contained within the first fraction of a second but the big bang theory of which lumetra **was unknowingly the first true proponent has been the subject of debate research** * of decent correct wise people and .. on the contrary in Bohemia 80 years later HDV was the subject and

reason of persecution of heretic for many years .. <http://www.hypothesis-of-universe.com/index.php?nav=controversion>) and speculation for nearly 100 years how did the universe begin what was the trigger for its incredible expansion and could our simple matter brains ever even comprehend the real truth [Music] [Music] before le metre studies of the cosmos had largely focused on our own place within it as well as observations to determine its composition and extent the 13th century philosopher sigur of brabant was alone in venturing the statement that the universe was eternal with no beginning his heretical views outraged the theologians of the time and earned him condemnation by the pope in 1277. rumor has it he was murdered with a pen a symbol of the damage his ideas had done since then no serious scholar had contemplated changing history or a beginning and so lumetra's calculations rocked the cosmological world but they were not embraced by everybody [Music] the idea was that the universe started its life a finite time ago in a single huge explosion and that the present expansion is a relic of the violence of this explosion this big bang idea seemed to me to be unsatisfactory even before detailed examination showed that it leads to serious difficulties one respected but controversial astronomer fred hoyle railed against lumetra's expanding universe history even coining the term big bang as an insult for the implication of an expanding universe * (I caught dozens of those insults... along with shouts "jump out the window, you moron." And Prof. Kulhánek supported his companions in that insult.)

(02)- is that at some point it must have begun expanding and at some point the universe itself must have begun this hoyle confidently declared was pseudoscience * (that is, the Mashbil phantasmagoria of unrecognized geniuses, as P.Brož said about me) little different from trying to justify the existence of a creator the only reason he said that we were so attracted to this novel big bang theory was because the teachings of the book of genesis are so ingrained into our collective psyche * (that..that collective modern teaching of the Standard Model is so ingrained in the brains of contemporary physicists that to claim that matter is built from dimensions of space-time, is so crazy that the author belongs to the insane asylum) and yet lemaître was quite happy to keep physics and religion separate his mathematics didn't yearn for theological validation and they were supported by real observations of the real universe made by eminent astronomer Edwin Hubble just a few years later from the mount wilson observatory northeast of los angeles hubble had gazed tirelessly through the largest aperture telescope of the time peering at some of the dimmest parts of the night sky his measurements would prove conclusively the long-held suspicion that there were more galaxies than just our own milky way but they would also show something that nobody had expected luminous objects like stars emit light as a result of the fusion in their cores the colour and characteristics of that light depends on the temperature and the composition of the star but it also depends on the star's movement just as an emergency vehicle sounding a siren will sound different when it's moving towards us or away from us so too the light from the star will be altered when it's moving closer or further away in sound the phenomenon is known as a doppler shift * (radial shift to the dimension "x" in the spectra for axial changes of the wavelengths on the "y" axis of the ripple... of light). (It will be very interesting to explore the connection with the rotation of "own" systems, see STR in global space-time ... because in large-scale space-time, this is curved) and in light it's redshift the light waves emitted by stars moving away from us are stretched out the same energy must now cover a greater distance so the wavelength is subtly increased in the visible spectrum the longer wavelengths of light are coloured red to our eyes and so receding stars appear more red than they actually are [Music] hubble wasn't the first to discover redshift in astronomical objects but his observations at mount wilson did uncover a surprising truth every galaxy he studied was redshifted every single galaxy was moving away although at first this would seem to support religious notions of the earth being the center of

the universe the truth is stranger still Hubble saw that the more distant galaxies receded much more * (or axial "expansion") quickly than those close by and this could only be possible if the whole of space was expanding these observations were a striking vindication of lumetra's mathematics and of the concept of a tiny beginning to our universe in 1964 researchers at bell labs in holmdale new jersey were using a gigantic horn antenna to tune into radio waves bounced off some of the earlier satellites the work demanded unprecedented precision and the scientists went to great lengths to eliminate all possible outside sources of interference but despite their best efforts their results were plagued with a persistent noise they couldn't eliminate at first they thought it could have been the results of pigeons roosting in the shelter of the huge antenna their droppings disturbing the signal or perhaps it could have been interference from bustling 1960s new york city some 50 kilometers away but eventually it became clear that the noise wasn't pigeons or people it was coming from outside our galaxy it was a property of the universe which we now recognize as cosmic microwave background radiation this radiation is a remnant of a time when the universe was very small and very very hot as predicted by lumetra's calculations the expansion of space has since spread that radiation out stretching the once intense heat waves into microwaves with a background temperature of just three degrees above absolute zero these radiation scars burned into the fabric of space of vindication of the truth of the big bang the big bang theory is now the accepted model for the cosmos a picture of expansion over some 13.8 billion years * (my number is 14.24 billion years, their number is calculated from the Universe Uncurved) but there is still much work to be done much understanding to be sought the nature of the universe's first moments are still shrouded in mystery and so many questions remain unanswered what really was the big bang and why does it break our understanding of the universe [Music] models of an expanding universe were originally based upon albert einstein's theories of general relativity which he had formulated some 20 years earlier but when einstein heard about this radical new theory he was uncomfortable he declared that lumetra's maths were sound but his physics was atrocious the problem was once again the implication that an expanding universe must have had a beginning but here it wasn't the theological arguments that casted into doubt rather the fact that the physics of the time had no explanation * (I have it in HDV today) for how such a thing could happen or what it even looked like le metre extrapolated the universe back to what he describes as the primeval atom which contained within it the potential for the entire immeasurable universe

(03)- we can trace the beginning of time and space back to this single point but as for what it looked like or how it worked even now physicists aren't sure when all the stuff of the universe is compressed into an increasingly smaller space the laws of physics dictate that the density will increase and so will the temperature we have a good idea of what happens to matter under these kinds of conditions thanks to small scale experiments in gigantic particle accelerators but our experiments and our understanding can only go so far after that things become unclear beyond the realm of particles and subatomic quarks and their mysterious companions is a compressed universe of pure energy where weirdness rules the fundamental laws of physics which govern everything we see and experience break down it becomes harder and harder to predict how this hyperdense and hyper-hot primeval universe worked * HDV must be read how small could it really get what makes it begin to expand in the last few decades theoretical physicists have grappled with tentative theories one that reigned for a long time is that the cosmos began as a gravitational singularity a single one-dimensional point from which all of time and space were birthed this is not dissimilar to the singularity at the center of black holes like the one that lurks at the center of our galaxy the singularity is a point that is so immeasurably dense that the gravitational pull from it reaches infinity in the case of black holes the gravity is so strong that light cannot escape but a singularity at the beginning of the

universe would have no light to consume as it already contained everything there was to contain if the universe today is infinite in extent then the infinitely small singularity would have a density and temperature that would also extend to infinity concepts of infinity stretch our minds to breaking point and that's not the only problem with gravitational singularity as a starting point if at the moment of its beginning the cosmos had been an arbitrarily dense and hot point then scientists believe the universe that resulted from it would have looked very different from the one in which we find ourselves there should be huge fluctuations in temperature and density from one end of the cosmos to another and there aren't there should be ultra high temperature relics of the infinitely high temperature state but there aren't space itself should be more lumpy but it isn't in fact the universe is remarkably uniform when looked at as a whole the fluctuations in temperature and density that we see average out and you would struggle to pinpoint yourself in space based on these kinds of features alone cosmologists go so far as to say that it is smooth and the chances of a singularity creating a smooth universe are infinitely small but there is another option it may have all begun with a period known as inflation during this inflationary period right at the earliest moments of the cosmos space expanded exponentially doubling in size from one moment to the next things that increase exponentially get very big very fast and so this cosmic inflation was sufficient to put the bang into the big bang itself expanding much faster than even the speed of light it was enough to stretch the universe flat and to make it uniform all over which is precisely what we see today according to the theory the universe was imbued with energy which caused the exponential expansion when the exponential expansion ended although we don't know why it ended the energy inherent to the universe is converted into matter and radiation marking the beginning of time and space as we understand it the features of the modern universe only allow us to see the final decillionth of a second's worth of this inflation that's 1 over 10 to the power 33 during which time physics made a little more sense but we still don't know how long the inflationary period lasted could the inflation itself have started with a singularity logic says no if exponential expansion means doubling in size then running that in reverse we see the universe shrink to half its size then a quarter an eighth a sixteenth and so on the fractions become vanishingly small but they never reach zero from a purely mathematical point of view a singularity of zero size is an impossibility so right now we don't have the tools to understand or describe inflation any further back **we may never understand** it the origins of cosmic inflation extend back into the fog of pre-time beyond the reach of science and into the realm of pure speculation **thus the big bang is perhaps not the beginning** * **but that Big-bang is a famous change in the state of curvature of dimensions 3 + 3D space-time "before Třesk" to the state "after Bang"...**; I don't know why the famous "flipping" of extreme positions-positions "smooth to crooked", but "The principle of alternating symmetries with asymmetries would know". ... When was this Principle "born"? I don't know, but it could have been already in wel-universe "my expression for the state before the Bang) when (NOT) SOMETHING and NOTHING prevailed at the same time" or what was before? Something or Nothing? or "simultaneously"? God was twoalone!!

(04)- of the universe at all but rather the line * (ie the interface as I say, the interface as a change of the previous state to the next state ..) drawn in the cosmic sand * (that sand is 3 + 3 dimensional space-time) marking the limits * (between the flat and curved state of the universe before and after the big bang) of our own understanding not a beginning but a history whose opening paragraph may be several pages **in but is the first to make any real sense** and yet if we really stretch our minds to the limit of our comprehension **the extreme edges of theoretical physics** * (my question: how would theoretical physics or mathematics explain two extremes)? straight line ", hence space): **a) smooth-straight-linear and its opposite, ie b) supercritical = crumpled space-time in the locality** may give us the tools to break through

that fog [Music] in 1981*(this is the year my HDV was born) in the shadow of saint peter's basilica in Vatican city the top cosmologists of the time met for a conference organized by the pontifical academy of sciences gone are the days when the pope would issue condemnations of cosmological thinking or perhaps it is precisely because the favored big bang theories now point towards a mysterious beginning for the universe that theological institutions see parallels of their work in mathematical cosmology regardless at this conference among the hushed gardens of the vatican 39 year old stephen hawking is an honoured guest and he presents some of his latest thinking on the beginning of the universe he addresses the assembled scholars his own voice cutting through the last shreds of muttered conversation his disability has already begun to take its toll and the close friend sits alongside him translating his words for others in the room to understand but while his words may seem ill-formed his thoughts have never been clearer even if they too seem to make no sense the universe is finite he says but it has no edge someone standing at the far end of the observable cosmos 13.8 billion light years away would see space exactly as we do as you go back to the beginning of the universe space and time become fuzzy but they curve around and cap * STR is evidence of the rotation of systems in the blob universe, the evidence of the global curvature of large dimensions in time 13.8 billion years after the big bang that unfolds (space-time unfolds its initial curvatures of dimensions in the plasma), not Hubble's "expansion" off much like the south pole of our planet trying to understand what came before the universe is like asking what is south of the south pole the question itself is meaningless hawking's no boundary proposal rocked the scientific community and left the rest of the world scratching * in the Czech HDV basin it shook the community of "smart" so hard that I have suffered savage persecution and humiliation since 2005 to this day. their heads while we may understand that there is nothing south of the south pole seeing that in the context of all of space and time is a difficult concept for us to grasp as we strive to understand our place in the unfathomable cosmos we can't help but grasp the answers to potentially unanswerable questions what was there before what is the universe expanding into and why did it start at all [Music] testable science cannot give us the answers we seek time is a fundamental property ?? time is not a "property". Time is a phenomenon of the existence of the Universe and the Universe... and is the building block of matter of the universe in existence and so there was no time before the big bang there was no before space is a fundamental property of the universe in existence so there was no space before the big bang there is no outside the cosmos just is something that breaks all the laws of physics is impossible to visualize let alone study but even in the face of the truly mysterious the modern scientific approach isn't content with simply saying that we don't know that we can't know scientists continue to speculate they take an obscure property of the universe or a mathematical concept and run with it to come up with speculative theoretical possibilities that might just might give us a pinhole view into the impossible before and the intangible why one of the most popular pieces of speculation has become known as the big bounce in which the universe is eternal but transitions between an expanding state described by the big bang and a contracting one known as the big crunch the idea of this endlessly inflating and deflating cosmos has been around since the early 20th century ← Is this interpretation proof how small? big ? The "pinch of an idea" from my HDV lacks physicists to * understand * further progress (my little step and big step for humanity in understanding the Universe) -> The universe is "twoquantities" and matter is built from the dimensions of these two quantities = phenomena: Length and Time. but it was only in the last decade or so that physicists have discovered how it might be possible theory posits that in the very earliest moments of the universe everything is so small that reality is governed by quantum mechanics *(and the essence of QM is the "boiling state of dimensions" of the vacuum, the dimension 3 + 3 of space-time) the strange properties of the quantum world mean that a contracting universe can be saved from complete collapse by quantum tunneling

from a point just before the collapse to a point just after it transitioning instantaneously from a contracting space-time to an expanding one at the other end of the universe's timeline after a big bang style expansion for billions of years it's hypothesized that the density of matter in the cosmos will have sufficient gravity to overcome the force driving expansion and eventually reverse it but the latest observations of the modern universe suggest that the expansion Hubble saw back in the 40s is **not in fact slowing down but is actually accelerating** ??? No this is a spanner in the works for the big crunch but there is another option [Music] in 2010 british theoretical physicist Roger Penrose presented **a new theory of conformal cyclic cosmology** **founded** ?? in some **of the most complex mathematics** and theoretical physics available to cosmologists today * **using mathematics, I "establish" any hypothesis, even about Beelzebub. the model *relies on the concept* of conformal geometry* it's still just an idea, a hypothesis which concerns the geometry * (probably like my packages-geons of coiled, collapsed dimensions of space-time, which by their "character" properties are matter) of shapes irrespective of their size a chessboard-**mesh-yarn 3 + 3 space-time dimensions** has the same geometry the same number of squares the same aspect ratio**

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(05)- regardless of how big it is whether it's a tiny pocket-sized board or a huge garden set the game is still played the same and these principles apply to our own universe at the points in its history when we lose track of scale one of these points is in the murky high energy instant **just before the big bang** * **I do not know this interpretation from Penrose** the other is in the far distant future when black holes have swallowed everything and the overall energy is **so low that all space and time cease to have any meaning** ??? although many would consider a tiny hot universe and a huge cold one to be about as different as it's possible to be according to conformal geometry * **however, this description is a parallel to the "curvatures of dimensions"; geometric "flatness" of dimensions is the opposite extreme to "max. curvature"** **dimensions after big-bang they are equivalent a huge cold universe at the end of its life behaves just the same as a hot one at its beginning** * **Yes, at the end of "existence", "after unpacking the dimensions", the Universe will be the same as "before the Bang", which was "at the beginning of our universe" ...; the genesis of laws is still out of consideration here (because after the Big Bang there were not "all" laws, they were also "born" during the genesis, the aging of the universe, ie during the decomposition of states) and in another narrative I have a vision of "why" the universe was just like that what is presented here today could have been in another form from other elements. particles and other laws ..**

http://www.hypothesis-of-universe.com/docs/g/g_041.pdf Penrose uses these mind-bending principles to reason that one naturally leads on from the other that we are living through a single eon of our universe and that in a google years or so the loss of scale at the death of the universe will lead to the big bang of a brand new eon at the beginning of a new history - **new big-bang + geneze** [Music] in both the big bounce and **conformal cyclic cosmologies** * **So: this contemporary Universe and its space-time will expand for so long = straighten the space-time dimensions until "to the end" where it will be smooth, ready for a new cycle, a jump called big-bang our big bang is both a beginning and an end and is just one of many big bangs in the endless stream of universal existence** * **Penrose is on the same trail as me** but there is an **even stranger theory** with its origins in strings in the spring of 1995 at the university of southern california in los angeles the american theoretical physicist Edward Whitten made an extraordinary announcement that was music to the ears of string theory **scholars worldwide string theory models had been developed over the preceding 50 years to explain the fundamental nature of mata** * on an unimaginably small scale **it claims that all particles are ultimately composed of one-dimensional strings of Nothing**, * **these considerations are "in pale pink" with their logic and intent, just like my packs-geons-wavy-balls-packed, twisted**

from the dimensions of two quantities... Penrose for that praise, I persecution and humiliation and insult... that move through space and interact with one another but to explain everything in our universe different versions of string theory argued that there must be other entities with more dimensions * length dimensions only. My HDV suggests more length and time dimensions two-dimensional sheets or three-dimensional volumes and even more this model which was intended to unify all of physics had done little more than divide the scientific community but Edward Whittton rejected such divisive thinking he conjectured that all the different versions of string theory could all be true if they were incorporated into an 11-dimensional reality his proposal of this so-called super-string theory sparked a flurry of research and offered a new if perplexing possibility in super-string theory space-time is described by no less than 11 dimensions in this theoretical framework our own universe which we experience in the three dimensions of space and one dimension of time can be considered a mere portion of the whole a so-called brain in the bulk of hyperspace physicists suggest that our universe developed from the energy released when higher order brains collided the energy from the collision provides the motion force for the big bang and subsequent expansion of the universe but it can't last forever tension between these higher order brains will cause them to retract and re-collapse after a mere trillion years * blah-blah, Mr. Whittton, you speculate more and more wrongly bringing an end to our universe that we are unable to visualize or even comprehend this heady theory is known as the equiotic model blah-blah referring to ancient myths that see the world born in a fiery explosion for now we have no tools to detect the higher dimensions * I also do not know the final resolution of the problem. So far I am in the position that the 3 + 3 dimensions of space-time are physical dimensions and the higher ones are "mathematical" dimensions due to "twisting" geometry... and I am even in the position that I do not need even higher extra non-physical dimensions: for my construction of basic mass elementary particles (quarks and leptons and bosons) I only need 3 + 3 physical dimensions <http://www.hypothesis-of-universe.com/index.php?nav=ea> which in multiplications give mathematical extradimensions, but this does not contradict "Physical dimensions. So no "higher dimensions" than physical 3 + 3 are meant to be clarified if the "mathematical curvature-wrapping" of physical dimensions into balls such as baryons and mesons is clarified, eg http://www.hypothesis-of-universe.com/docs/ea/ea_013.pdf if they really exist so like the other theories that try to explain and justify the cosmos HDV they remain little more than highly informed speculation but the big bounce the conformal cycles and the equiotic brain cosmos are all possibilities that lie at the bleeding edge of modern cosmology like all good theories they try to make predictions that we can test through observation and experiment but so far no evidence has come to light to give us any real clue [Music] our understanding of the cosmos

(06)- relies like a house of cards on our understanding of physics and mathematics which continues to change and evolve the true nature of the big bang and the meaning of the universe as a whole may always be incomprehensible to our monkey brains or perhaps a new revelation will turn everything on its head tomorrow we can only keep asking and trying to see through the frog [Music] you've been watching the entire history of the universe don't forget to like and subscribe and leave a comment to tell us what you think and we'll see you next time

JN, 09.07.2021