



# The universe or nothing: The heat death of the universe and its ultimate fate

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The cyclic universe through the origins

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Abstract

I report the result of the cyclic universe theory and connect it to the origin of science and God showing some discussions about the cyclic model and the string theory, the cyclic model and the cosmological constant. And discussing the equation of Albert Einstein of the relation between mass and energy.

1 Introduction

the universe is polarized [Wanjek \[2003\]](#) as we start o as pure energy which follows the path of least resistance creating a complete circle [[Mukhanov and Chibisov, 1981](#)] and energy is converted to mass and visa versa and it's thought that this theory is better than the Big Bang theory as the cyclic model explains where the energy came from as it's an eternal cycle, but when did the rst cycle came from? and what force drives ination? So in the cyclic model the energy that creates the universe is eternal [[Novello and Heintzmann, 1984](#)] [[Wetterich, 2014](#)] and according to thermodynamics laws, the energy cannot be crated or destroyed, but it can only be converted as there will be energy as log as there is an eternal universe, so the cyclic universe doesn't support the idea of inated universe as in cyclic universe the universe is not a physical thing, but an event that happened everywhere in space by 360 degrees.[[Summers, 1971](#)]

$E = MC^2(1)$

2 Overview

The universe in only eternal in time and not innite in space as the universe is constantly changing and converting from mass to energy and from energy to mass [[Summers, 1971](#)] as the universe is not a physical object, but only an event that is happening in time as the universe is meant the movement of space through time, the cosmologists discovered that the universe began about 14 billions years ago and before this time there were no universe, so according to the cyclic model of the universe, does that mean that we are the rst universe in this cycle? The universe has a cosmic microwave background, so when we look at space this means we look back in time, so the evidence of the Big Bang (CMB) that

we discovered and got many pictures of it through 3 missions is only the evidence of the big bang of the current cycle according to the theory, so the universe according to the cyclic model is eternal as it's a balance between energy and mass according to Einstein theory, so the universe will always be there and there is no end to the universe according to the cyclic model as long as there is a balance between energy and mass there will be always a running universe, so the universe is eternal. [Boyle et al. \[2004\]](#)

## 2.1 Principals and discussions around the theory

### 2.1.1 The shape of the universe in the cyclic model

In the cyclic model there is no shape of the universe, as the universe is all there is, there is no outside the universe, so the universe is not closed, at or open and it never took the shape of torus, circle or any other

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shape, so the universe is only eternal cycling of energy and mass, and every object is on the center of the universe. [Steinhardt and Turok \[2002a\]](#)

### 2.2 Is there an end for the universe in the cyclic model theory

There is no end for the universe as the universe is eternal and will remain as long as there are enough mass balanced with enough energy, so we are facing an endless universe, but we only face and end of the cycle. [Steinhardt and Turok \[2002b\]](#) Each cycle starts at a single point of time and ends at a single point of time

### 2.3 The cyclic model and cosmological constant

The cosmological constant represents the energy of empty space, and is thought to be the most likely explanation for the observed speeding up of the expansion of the universe. [Steinhardt and Turok \[2006\]](#)

It's thought that the universe is made up of energy and those energy are the energy that we experience, like the sun and galaxies, dark matter and dark energy, the cosmological constant is thought to be the measuring of the dark energy as the dark energy is increasing constantly with the expanding universe.

### 2.4 Is string theory an evidence to the cyclic model?

the equations of string theory tell a different story, allowing time to exist before the big bang.

today's universe is part of an endless cycle of big bangs and big crunches, with each cycle lasting about a trillion years. At every big bang, the amount of matter and radiation in the universe is reset, but the cosmological constant is not. Instead, the cosmological constant gradually diminishes over many cycles to the small value observed today.

the cosmological constant decreases in steps, through a series of quantum transitions. Crucially, the higher the value of the constant, the more rapid the transitions

as the constant reaches lower levels, it changes more slowly, lingering on the lowest positive value for an extremely long time. That means that today's universe is most likely to have a small cosmological constant, just as we currently observe.

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XN = 1 (2) 12

n=1

3Conclusions

This paper is covering the results of the cyclic model of the universe, showing it's principals and problems like the cosmological constant problem and quantum uctuation idea and the idea of energy conversion showing the relation between the quantum uctuation and the energy conversion to make an ideal model of a universe.

List of Figures

1Cyclic model graph explains the dawn fall of the energy back into singularity after th\ne rst cycle face the Big crunch ..... 3.

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Figure 1: Cyclic model graph explains the dawn fall of the energy back into singularity after the rst cycle face the Big crunch

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