

Lacking adequate competition essay

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Lacking adequate competition, the popular prototype has dominated the metaphysics front for the past two decades even though much of its complications have been left unresolved. With the advent of progress in cosmic microwave background detection, these unsettled loopholes are begging for answers.

A successful model that seeks to replace the Big Bang notion must be ready to explain the past, present and future states of the universe in an efficient and unified manner. The Cyclic Model has just the ambition to tackle the callings of this brave new world. The Cyclic Model offers a viable mechanism for explaining the observed cosmological phenomenon by building on the notion that the universe undergoes an endless cycle of collapse and rebirth where space and time exist forever. Consistent and inspired by superstring theories, the Cyclic universe comprises of two parallel, dimensional space-time branes, separated by a finite distance in a larger fifth dimension bulk.

On only one of these branes is all the constituents of our familiar universe. The other can be regarded as a parallel universe. These two realms are free to move along the extra spatial dimension so they may approach and collide with each other. (Figure 1 on page 4 offers a “2-D” visual representation; some imagination is required JOY) Each cycle begins with a “bang” where the branes bounce from an instantaneous collision of the two branes. Collision is partially inelastic; hence energy is expended by instilling the universe with an abundance of primordial matter and radiation. Conditions set the stage for unconsciousness and soon after the formation of galaxies. In the next phase, dark energy causes a slow cosmic acceleration which empties the

universe of all the entropy and black holes produced in the previous cycle, so the universe is returned to its original pristine empty state.

The slow expansion lasting up to trillion years is therefore responsible for the presently observed homogeneous, isotropic, and flatness of the universe. As our two parallel universes expand further and further away, a negative potential energy triggers the reversal from expansion to contraction. The ; o brakes then rushes back towards each other as the extra dimension separating the two collapses. Finally, the universe comes full circle where a new ' big bang' does not denote the beginning of time but merely serves as a transition from an earlier cycle of universal evolution. In this fashion, the Cyclic Model revised an alternative, yet adequately explanation for formation and observed trends of the current universe. Unlike the Cyclic Model, the Big Bang-Inflation theory fails to address several fundamental elements of the universe.

Firstly, the Big Bang-Inflation theory simply implies that the bang denoted the beginning of time and avoids answering the cosmic singularity problem. Supporters of this theory claim that the laws of physics break down for times before the inflationary moment. In this sense, the theory is unable to account for whether the big bang truly began time. In the Cyclic Model, the singularity corresponds to the ruinations between cycles where the two brakes collide and recoil. At the instance Of the impact, the one extra dimension separating the two brakes disappears for an infinitesimal fraction of time but reappears immediately to start a new cycle. Secondly, although many predictions of the Big Bang- Inflation theory have been supported by

ample astronomical observations during the past decades, the discovery of dark energy came as an unanticipated surprise as it plays no particular role. The element of dark energy was simply added as an afterthought.

In contrast, dark energy and cosmic acceleration are intrinsic ingredients in the cyclic universe. In Cyclic Model's depiction of two parallel branes, particles of one universe are constrained to exert physical movements only along the one brane. These particles, however, can interact with the other brane through gravity which acts throughout the 5-dimensional bulk. Therefore from the perspective of an observer on one of the branes, the matter on the other effectively behaves like dark matter. Furthermore, dark matter is fundamental to the cyclic universe as it serves to provide the potential needed for accelerated cosmic expansion.

The Cyclic Model successfully explains all the predictions of the Big Bang model and, not only accomplishes it more economically, but also explains other mysterious features like dark energy. Although no current experiment is capable of distinguishing between whether the Big Bang or Cyclic Model is the correct representation of our universe, it only leaves for these two competing ideas to be subjected to the test of time. One major discrepancy of the two models is the time-scale by which the universe expanded following the 'bang'. The Inflation Model highlights a brief period of very rapid cosmic acceleration whereas the Cyclic universe emphasizes a particularly slow episode of expansion. Theoretically, the corresponding remnant gravitational wave spectrum will be blue for Cyclic Models and red for Inflation. Future measurements of gravitational waves or their effect on

the popularization of the cosmic microwave background is key to distinguishing between the 2 pictures. Fortunately, the European Space Agency's 2007 Planck satellite mission is designed just for this purpose. Like never before, this mission employs instruments with unprecedented sensitivity and resolution.

The returned images should allow us to preferential between the two prevailing models and determine the origin of the cosmic structure.