PROLOGUE

At the end of the 19th century, most scientists were convinced that there was little left to do in the field of Physics, that all the specialties within this discipline were complete, and that at most, one could add a few decimals to the values of some constants and little else.

It was precisely at the end of that century, and the beginning of the 20th, with the work of Max Planck in Quantum Mechanics and Albert Einstein in Relativity, that the greatest progress and transformation in the field of Physics occurred.

At that time, scientists and educated individuals had a widely accepted general idea of the Universe: that of a "Static and Eternal Cosmos," meaning unchanging, with no beginning or end in time, and also "very tiny," composed solely of the objects in our own galaxy.

This conception of the Cosmos, Static and Eternal, was defended for a long time by Albert Einstein. He was so convinced of this hypothesis, due to his bias, that he was forced to introduce the "Cosmological Constant", "ad hoc", into his General Relativity Equation to ensure it was consistent with the hypothesis of a stable and static universe, despite of the fact that the mathematical expressions he himself had derived indicated otherwise.

Since Edwin Hubble demonstrated that the Cosmos is expanding [Hubble E. 1929], the idea that had prevailed among scientists and educated individuals at the end of the 19th century and the beginning of the 20th about the birth and evolution of the Cosmos—a "static and eternal Cosmos," unchanging, with no beginning or end in time—collapsed, necessitating the establishment of new hypotheses.

The Russian mathematician and meteorologist Alexander

Alexándrovich Fridman had already anticipated Hubble by mathematically deducing that the Cosmos could not be static and unchanging. Fridman was the first person to fully understand the equations and the meaning of General Relativity, even surpassing Einstein in his perception of the concepts contained in those magnificent formulas by stating that the Cosmological Constant Einstein had introduced "ad hoc" made no sense, and consequently, the Cosmos could not be static and unchanging [Fridman A. 1922].

Unaware of Fridman's prior work, Belgian Jesuit priest Georges Lemaître also anticipated Hubble's discovery. Based on the equations of General Relativity, he reached conclusions similar to those of Fridman, regarding an expanding Cosmos, and presented "the hypothesis of the primordial atom" or the "cosmic egg." According to this theory, all the mass-energy of the current Cosmos was contained within an extremely small, dense, and hot singularity before the beginning of everything, and after a kind of explosion, an expansion began that continues to this day [Lemaître 1927].

With Hubble's discovery of the expansion of the Cosmos, it became clear that alternatives to the idea of a static and eternal Cosmos needed to be sought. However, Albert Einstein clung to his ideas, despite the evidence provided by the equations he had derived. In 1931, faced with the evidence presented by Hubble, Albert had to admit that he had "committed the biggest mistake of his life" by introducing the Cosmological Constant into his equations.

On the other hand, in order to satisfy the idea of an expanding Cosmos, Fred Hoyle established the hypothesis of the "Steady State Universe": An expanding Cosmos where mass is continuously created to maintain a constant density [Hoyle F. 1948].

Ukrainian physicist George Gamow, who had been a student of

Fridman, refined Lemaître's ideas, proposing the hypothesis of the explosion of a "Ylem," a gaseous mixture of neutrons, protons, and electrons in an extremely tiny, dense, and hot space, leading to a new model [Gamow G. 1948].

Hoyle, in a mocking manner, used a BBC broadcast to refer to Gamow's theory as the "Big Bang," a term that became firmly established and has persisted to this day.

In order to address some difficulties posed by the Big Bang conjecture, Alan Guth proposed in 1981 the "inflationary model," which states that the Universe underwent an accelerated expansion in its early stages known as "inflation."

The concept of the Big Bang with inflation is currently the most accepted hypothesis by the academic world to explain the birth and evolution of the Cosmos.

In this publication, we aim to show how the Big Bang hypothesis is not entirely convincing and how certain claims it defends are incoherent with other assertions it makes.

However, our proposal will not be limited to mere critical analysis. Instead using physical-mathematical methods, we will derive a new equation that opens up a different perspective and understanding regarding the birth and evolution of the Cosmos, much more logical and without dark corners, while eliminating the inconsistencies found in the Big Bang model.

We must highlight that we have managed to obtain the new equation through six distinct and independent procedures, which validates its deduction.

The Cosmos proposed in this publication does not arise from an extremely small, dense, and hot singularity that contained all the mass-energy from which the current Cosmos is born, as indicated by the Big Bang. Our suggested Cosmos starts from a quantum vacuum, from null mass-energy, and at the "Planck Time," the shortest possible time, as a result of a quantum leap, the Cosmos is born with an initial mass-energy equivalent to a "Planck Mass," occupying a sphere with a radius equal to a "Planck Length," the shortest possible distance.

This initial Cosmos will evolve, increasing its mass-energy by one "Planck Mass" and its radius by one "Planck Length" every "Planck Time" indefinitely, up to today and into the future, meaning it will increase its mass-energy by 1.73×10^{53} kg (equivalent to 200,000 Suns) and its radius by about 300,000 km every second.

In this publication, when we refer to mass-energy, we mean the energy equivalent of the rest mass plus the energy of electromagnetic radiation, that is, the energy due to photons, which continuously increase, all without violating the law of conservation of energy, as we will see.

Moreover, we will show how Gravity is the primary cause of everything and how its propagation speed, which we will designate as "@," should be considered as the true universal constant of speed, replacing the speed of light in vacuum "c."

As a result of the development of this publication, new working hypotheses arise that may help to understand the emergence and formation of particles, or to justify that the charges of protons are identical and opposite in sign to those of electrons, and that their respective quantities are identical, as well as to present a possible hypothesis for the origin of dark matter.

Dear reader, we hope this writing helps you to gain a new perspective on the birth and evolution of the Cosmos, based on mathematical evidence.

We are aware of the great difficulty this entails, given the enormous influence that the Big Bang hypothesis and the biases it establishes have over academic institutions and educated society in general.

The challenge of breaking away from deeply ingrained assumptions in the face of a new idea is very difficult, almost impossible; even Albert Einstein was swayed by his biases against the magnificent equations he had developed and introduced the Cosmological Constant.

Dear reader, if you revisit the logical processes outlined and manage to break through the barrier of prejudices, we assure you a new, distinct, and wonderful vision of a more logical and coherent Cosmos. We wish you the best of luck.

In the sociology of scientific thought, the "Planck Principle" suggests that a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather that its opponents eventually die off and a new generation grows up familiar with it from the start. Surely this is what will happen with this new paradigm proposed for the birth and evolution of the Cosmos, so we must prepare the youth.

For didactic purposes and with the intention of convincing readers of the proposed new paradigm, despite the indicated difficulties, the reader will notice that throughout the text there are certain recurring repetitions, aiming to reinforce and solidify the fundamental concepts and ideas.