Study of Inhomogeneous World Models in the Framework of Cusp Cosmology Conjecture

A Thesis
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ABSTRACT

We present in this work a "tailor made" Wold Model (WM) based on geometrical and topological principles. This proposal allows a different interpretation of the dark content in the Universe as well as the Inflation paradigm. We avoid the cosmological point-like singularity and propose a pre-Big-Bang structure based on a "Cusp Cosmology". This is done by gluing two previously partitioned hyperbolic spaces using Jaco–Shalen and Johannson decomposition. We show that some results of this approach can reproduce the ones calculated using Ricci tensor associate to Einstein's field equations without analyzing different curvatures. Specifically, the main result of this work is: For the first time we demonstrate the existence of an energy flow that can pass from one manifold to the other, partially solving the main Gauge theory problem using the Ricci flow constructed to demonstrate Thurston's geometrization conjecture. Since Minkowski's space-time is a subset of our constructed WM, Special Relativity is consistent with it as well as probably most of the astronomical observations.

To: Juan, Diana.

In Haydeé's memory.

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Specially to all my friends for their support.

"MATHEMATICS is not about numbers, equations, computations or algorithms: it is about UNDERSTANDING."

-William Paul Thurston

TABLE OF CONTENTS

ABSTRACT . . . . . **i**

DEDICATION . . . . . **iii**

ACKNOWLEDGEMENTS . . . . . **iv**

NOTES . . . . . **vii**

LIST OF FIGURES . . . . . **viii**

I INTRODUCTION **1**

1.1 Physics and Mathematics 3

1.2 Historical Background 4

1.3 The Standard World Model (SWM) 8

1.3.1 Thermal history of the Universe 9

1.4 Additional concepts 13

1.4.1 Time evolution in Einstein‘s equations 14

1.4.2 Cosmological Principle 15

1.4.3 Inflation 15

1.4.4 Dark Matter (DM) 16

1.4.5 Cosmic Microwave Background (CMB) 16

1.4.6 Accelerated expansion 17

1.4.7 Unsolved problems and proposals. 19

II INGREDIENTS AND CONSTRUCTION OF THE SPACE . . **24**

2.1 Geometry and observables 24

2.2 Thurston's work 25

2.3 Rosa's scenario 28

2.3.1 Rosa's conjeture 29

2.4 Construction of the Space 31

2.4.1 Cusp formation 31

2.4.2 Gluing two spaces in the cusp 34

III ENERGY FLOW ACROSS THE CONSTRUCTED MANIFOLD 38

3.1 Ricci flow main definitions 38

3.2 Manifold preparation for surgery 41

3.3 Dehn surgery 41

IV OBSERVABLES 47

4.1 Observables in $\mathcal{M}$ 48

V CONCLUSION 50

5.1 The proposed World Model 50

5.2 Open questions 51

APPENDIX A — *PUBLISHED ARTICLES* 53

NOTES

LIST OF FIGURES

1 Illustration of the evolution of the scale factor with time according to different possibilities for the Ω parameter: bouncing ($\Omega > 1$), flat ($\Omega = 1$), coasting ($\Omega < 1$) and accelerating ($\Lambda \neq 0$). The black point marks the present time. Note that, as a consequence, the current age of the Universe is directly dependent of the expansion pattern. 13

2 Image of the CMB in scales of μK from the observations of Planck satellite [38]. In dark blue there are zones ~ 0.0002 K colder and in dark red ~ 0.0002 warmer. The anisotropies (variations of temperature) imprinted in this map represent the perturbations in the distribution of energy (and, consequently, of matter) in the time of the photons decoupling, which gave rise to the structures we have today. 17

3 Illustrations representing the possible "shapes" (in a 3-dimensional Euclidean space) for the Universe in 3D (two space and one time coordinates) as a simplified version of the real 4D space-time. The different curvatures (k) denote the flat (k=0), closed (k>0) and open (k<0) cases. 21

4 A simple model of projected (inhomogeneous) cusp Universe. It shows a pre-BB represented by a purely energetic tautochrone of revolution and a closed post-BB. Imagen taked from: [87]. 30

5 In order to constuct the cusp we need to glue face A with A', B to B' and C with C' (following the direction of the arrows). The figure appeared in [39]. The partition is not represented here. . . . 32

6 After gluing the upper/lower half space we have the definition of a cusp. The figure appeared in [39]. 33

7 Representation of the complete formation of the cusp. We point out here that all the cusp is completely filled with Tori. 33

8 The lower half space with tori inside, mirror reflection of the figure appeared in Appendix 1 first article. 34

9 Representation of the procces of taking off the T^2 in the upper and lower half spaces, respectively, and gluing them again at the Planck time. 35

10 Representation of our proposed space. 36

11 Toy illustration of the WM with the Ricci Flow (waves in red). It is clear that the flow is not well represented, only the idea. 37

12 Dehn surgery in each tetrahedron at the center of the manifold, this process continues in all boundary tetrahedra. 43

13 a) Time is orthogonal to all surfaces; b) Time is non orthogonal (more difficult time-track). Idea of the picture is from discussions with Dr. Américo Peraza 45