

# The Law of Temporal Conservation: Geometric Simplex Annihilation and the Bobreshov Constant

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This paper proposes a resolution to the Schwarzschild singularity problem through a phase transition mechanism where 3D spatial simplexes undergo geometric annihilation into a 1D temporal flow. We introduce a fundamental coupling constant,  $\mathcal{B}$ , which quantifies the temporal duration generated per unit of collapsed mass. This model provides a non-singular interior for black holes and predicts the existence of gravitational wave echoes in post-merger signals.

## I. INTRODUCTION

General Relativity (GR) inevitably predicts gravitational singularities where the metric breaks down. By employing principles from Causal Dynamical Triangulations (CDT), we suggest that space and time are dual phases of a unified geometric substance. At the Planck scale, extreme curvature triggers a "phase jump," converting spatial volume into temporal duration.

## II. THE BOBRESHOV CONSTANT

The core of this theory is the Bobreshov Constant ( $\mathcal{B}$ ), which defines the threshold of spatial packing. It is derived from fundamental Planck units:

$$\mathcal{B} = \lim_{L \rightarrow L_p} \frac{\delta \text{Time}}{\delta \text{Mass}} \approx \frac{c^2 \cdot t_p}{m_p} \quad (1)$$

The theoretical value is calculated as:

$$\mathcal{B} \approx 2.23 \times 10^{23} \text{ s/kg} \quad (2)$$

## III. METRIC REGULARIZATION

The introduction of  $\mathcal{B}$  allows for a modification of the Schwarzschild metric, eliminating the divergence at  $r \rightarrow 0$ . The modified  $g_{00}$  component is expressed as:

$$g_{00} = - \left( 1 - \frac{2GM}{rc^2 + \epsilon \mathcal{B}^{-1}} \right) \quad (3)$$

Where the term  $\epsilon \mathcal{B}^{-1}$  ensures a finite curvature and a regular geometry within the event horizon.

## IV. PREDICTIVE FRAMEWORK: GRAVITATIONAL ECHOES

The annihilation front near the Planck-scale core acts as a semi-reflective boundary for gravitational waves. The time delay ( $\Delta t_{echo}$ ) between the primary merger signal and subsequent echoes is a function of the mass  $M$  and the constant  $\mathcal{B}$ :

$$\Delta t_{echo} \approx \frac{2GM}{c^3} \ln \left( \frac{1}{\epsilon \mathcal{B}^{-1}} \right) \quad (4)$$

## V. CONCLUSION

The Bobreshov model suggests that black holes are active "temporal factories" rather than information sinks. The conversion of space into time creates a cumulative "temporal pressure," offering a novel physical explanation for the accelerated expansion of the universe. Empirical verification via LIGO/Virgo archival data is proposed.