# Signals from a Symmetrical Universe: Pulsars, Cosmic Boundaries and Possible Traces of Intelligent Life

Radio signals coming from the depths of the universe are sometimes considered merely echoes of physical events. However, some raise the question, '**Is there someone out there?**' This text theoretically examines the possibility of interuniverse communication through pulsars based on the symmetrical universe model.

The symmetrical universe model posits the existence of a mirror version of the universe we live in, where antimatter dominates matter and time flows in the opposite direction. In this scenario, the region between two neutron stars positioned symmetrically in the two universes could be the boundary zone where the fabric of space-time is thinnest and most stretched.

If these two stars have not crossed the threshold for forming a black hole in terms of mass, this boundary may remain stable without collapsing. Therefore, energy transfer may not be possible in this region, but information exchange could become feasible. This information transfer could occur via electromagnetic waves—particularly radio signals.

## I-The Symmetric Universe and Black Hole Formation Hypothesis

The original hypothesis proposed in this study accepts that black hole formation can occur through the merger of close-mass neutron stars, as in the classical universe, even in a symmetric universe. However, if this merger falls below the threshold value required to create a black hole, the two neutron stars do not simply initiate a collapse; instead, they stretch the space-time membrane forming the boundary between the two universes to its maximum tension.

This membrane may be energy-impermeable but could become semi-permeable to information. Thus, the region created by these two stars could act as a kind of 'resonance gateway,' enabling an entity from the symmetric universe to transmit radio signals to our universe. Especially if the rotational motions of these stars are synchronised, this could establish a stable communication channel along the membrane.

This approach offers an interuniverse interaction model based on membrane resonance rather than black hole formation. This equilibrium state, where two neutron stars are too far apart to merge but close enough to interact, not only defines the physical boundaries of the universe but also creates a unique cosmic structure that could be used for information transfer across these boundaries.

**1. Classic Black Hole Threshold (TOV Limit)**

For a black hole to form, the total mass of the neutron stars must exceed the **Tolman–Oppenheimer–Volkoff (TOV) limit**. This limit is approximately:

$$M_{\text{Critic}} \approx 2.1\, M_{\odot} \quad (\text{Observational Interval} : 2.1\text{–}3.0\, M_{\odot})$$

**Here:**

- $M_{\odot}$: Sun Mass
- $M_{\text{kritik}}$: The Combined Mass Limit of Neutron Stars

**2. Expansion According to the Symmetric Universe Model**

In our model, there are **two symmetrical neutron stars** in each universe, and there is a membrane between them. In this case, **the formation of a black hole with the collapse of the membrane** can be defined as follows:

**Proposed Formula:**

$$M_1 + M_2 \geq M_{\text{Membrane}} + \delta E$$

**Here**

- $M_1, M_2$: The masses of neutron stars in the two universes (approximately equal to each other),
- $M_{\text{Membrane}}$: The stability threshold of the membrane; the minimum mass that prevents the membrane from collapsing (removed from the model).
- $\delta E$: In addition, tension energy accumulated along the membrane (quantum potential associated with space-time distortion).

**3. Additional Explanation: Energy of the Membrane**

The energy density of the membrane (e.g., in brane-world scenarios) can be modelled as follows:

$$\sigma \sim \frac{1}{G} \cdot \frac{1}{L^2}$$

**Here**

- $\sigma$: Membrane Energy ($J/m^2$),
- $G$: universal gravitational constant,
- $L$: the distance between two neutron stars.

Therefore, the collapse condition begins with the formation of a gravitational field that is too intense for the crust to withstand.

**4. Supplementary Full Formula:**

$$M_{\text{Collapse}} = f(\sigma, L, M_1, M_2) = M_1 + M_2 + \frac{\sigma \cdot A}{c^2}$$

- **A:** the influence of the membrane (roughly the interstellar surface),
- **c:** speed of light (for energy-mass conversion).

# II-Mathematical Model: Collapse Threshold and Membrane Resonance

According to this hypothesis, black hole formation depends not only on the total mass of stars but also on the energy density of the membrane and the interstellar distance. In this context, the proposed collapse formula is as follows:

$$M_{\text{Collapse}} = M_1 + M_2 + \frac{\sigma \cdot A}{c^2}$$

**Here:**

- $M_1, M_2$: the mass of two neutron stars (kg ),
- $\sigma$: energy density of the (Joule/m$^2$), membrane
- $A$: surface area affected by the membrane(m$^2$), Intersellar area, ussually calculated as $A = 4\pi(L/2)^2$
- $c$: Speed of light $(3 \times 10^8$ m/s).

**Surface Area:**

$$A = \pi L^2$$

**Membrane Mass:**

$$\Delta M = \frac{\sigma \cdot \pi L^2}{c^2}$$

**Total collapse threshold:**

$$M^{\text{Collapse}} = M_1 + M_2 + \Delta M$$

This model provides a framework that links collapse not only to total mass, but also to membrane energy and configuration.

# III-Natural Frequency of a Membrane – Membrane Model

The fundamental resonance frequency of a membrane is approximately:

$$f_0 = \frac{1}{2L}\sqrt{\frac{T}{\mu}}$$

**Here**

- $f_0$: resonance frequency of the membrane (Hz),
- $L$: characteristic length of the membrane ( for example, the distance between stars ),
- $T$: tension on the membrane (N),
- $\mu$: mass density per unit length (kg/m).

**a-Membrane Tension (T) and Mass Density (μ)**

The energy of the membrane can be defined by a surface tension:

- $T = \sigma$: energy density of the membrane (J/m² ≡ N/m),
- $\mu = \frac{m_{\text{membrane}}}{L}$: the ratio of the total mass of the membrane to its length.

**Equivalent mass of the membrane:**

:

$$m_{\text{membrane}} = \frac{\sigma \cdot A}{c^2} = \frac{\sigma \cdot \pi L^2}{c^2}$$

**Therefore**

$$\mu = \frac{\sigma \cdot \pi L^2}{c^2 L} = \frac{\sigma \cdot \pi L}{c^2}$$

**b-Resonance Frequency**

Substituting the above expressions:

$$f_0 = \frac{1}{2L} \cdot \sqrt{\frac{\sigma}{\mu}} = \frac{1}{2L} \cdot \sqrt{\frac{\sigma}{\frac{\sigma \pi L}{c^2}}} = \frac{1}{2L} \cdot \sqrt{\frac{c^2}{\pi L}} = \frac{c}{2L} \cdot \frac{1}{\sqrt{\pi L}}$$

**c-Membrane Resonance Frequency Formula (FINAL FORMULA)**

The natural frequency required for the cymbal to resonate can be defined as follows:

$$f_0 = \frac{c}{2L\sqrt{\pi L}}$$

Bu frekansa eşdeğer dış uyartı, zar boyunca bilgi rezonansı oluşturabilir.

# IV-Known Resonance Candidate Pulsars

Some of the known pulsars closest to symmetrical resonance frequencies:

- **PSR J2144−3933** – Period: 8.5 s
- **PSR J0901−4046** – Period: 75.9 s (the longest period radio pulsar)
- **AR Scorpii** – Period: 118.2 s (white dwarf pulsar)

The signal frequencies of these pulsars correspond to resonance frequencies compatible with specific membrane sizes.

# VI-New Candidate: ASKAP J1832-0911

Recently discovered, ASKAP J1832-0911 emits a two-minute radio and X-ray signal every **44 minutes**, deviating significantly from known pulsar behaviour.

Measurements related to this object:

$$f_{ASKAP} = \frac{1}{2640} \approx 3.79 \times 10^{-4}\ \text{Hz}$$

This frequency also coincides with a possible sub-mode of the resonant frequency. It can be considered as a second example supporting the possibility of an information signal coming from a symmetrical universe.

# The Idea of Responding to Pulsars – Theoretical Discussion

Some theorists (especially leading physicists such as Freeman Dyson) have speculated that if someone wants to communicate with us, they could use sources that emit **very distinct and regular** signals in nature, such as pulsars, as '**carrier' signals.**

However, despite this:

- No serious institution (SETI, NASA, ESA) has yet attempted to **actively respond to these 'oddly behaving pulsars'**.
- This is because this approach raises some **ethical and security concerns**:
    - Who are we responding to?
    - What would the content of the return signal be?
    - Would it be communication, or an attention-seeking act?

# Is it testable?

Absolutely **testable**. Especially according to our model:

'If this signal is an echo from an interdimensional membrane and is regular, perhaps responding to that pattern in the same way could trigger resonance.'

This provides fertile ground for both science fiction and theoretical physics. In particular:

- At the same frequency,
- At the same time,
- Perhaps by sending a **coded signal** containing constant numbers (π, e)
- To create resonance at the boundary…

It could be the reverse of saying '**we are here**' in the truest sense.

# CONCLUSION

Pulsars are not only the regular heartbeats of the universe, but also carriers of a cosmic language. Perhaps some of these signals are whispers from intelligent life forms at the other end of the universe saying, '**We are here**.' And the only way to hear these whispers is no longer just to listen, but to respond.

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