

## Wave Equation and AT Math

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### Article Info

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### Abstract

This paper provides some insight into Cosmological Constants and how they come from the well-known Wave Equation.

**Keywords:** Wave Equation; Gravity Waves; Density; Period

### Introduction

The Wave equation has been around since the 18<sup>th</sup> Century when d 'Alembert discovered it. In this paper, I work through a few simple calculations for the universe as described by Astrotheology Math (AT Math) [1-2].

#### The Wave Equation:

$$\partial^2 u / \partial t^2 = c^2 \partial u^2 / \partial x^2$$

$$a = k s''$$

$$s = |E|t \sin \theta$$

$$s' = (dE/dt)(dt/dt) \cos \theta$$

$$s'' = d^2 E / dt^2 (dt^2 / dt^2) (-\sin \theta)$$

But  $G = d^2 E / dt^2$  from the Clairnaut D.E.

$$s'' = G(1)(\cos \theta)$$

And,

$$\partial^2 u / \partial t^2 dt^2 = a = v = \sin 45^\circ = \cos 45^\circ = 1/\sqrt{2}$$

$$1/\sqrt{2} = (-0.4233)(2/3) \cos \theta$$

$$\cos \theta = 2.993(6.67) = 2$$

$$\theta = 114388$$

$$\ln \theta = \pi$$

Or,

$$G = \cos \theta / c$$

$$G = \cos \theta / [k a]$$

where  $k = \pi - e$

$$a = v = \sin 45 = \cos 45$$

$$\partial^2 u / \partial t^2 = c^2 \partial^2 u / \partial x^2$$

$$a = c s''$$

$$\text{Let } E = t = 1$$

$$\begin{aligned}
 a &= 1/\sqrt{2} & &= 3 C \\
 c &= 2.99792 & & c^2 \nabla^2 E - G = 0 \\
 s &= |E|t \sin \theta & & c^2 \nabla^2 E \\
 s &= (1)(1) \sin \theta & & = c^2(-c^2) \nabla^2 \\
 s' &= \cos \theta & & \text{Let } C=3 \\
 s'' &= -\sin \theta & & = -c^4 C \\
 1/\sqrt{2} &= 2.99792^2 (-\sin \theta) & & = -80.7 (3C) \\
 \csc \theta &= 127.3 = \rho \text{ (Density)} & & 302 C \\
 \text{Or } 1/\rho &= -\sin \theta & & = 8.9875 \\
 \partial^2 u / \partial t^2 &= c^2 \partial^2 u / \partial x^2 & & = 2.99792^2 \\
 \int \partial^2 u / \partial t^2 &= c^2 \int \partial^2 u / \partial x^2 & & = \text{Speed of light.}
 \end{aligned}$$

$$\begin{aligned}
 a &= 1/\sqrt{2} = v \\
 v &= \int a \\
 c &= 2.99792 \\
 1/[\sqrt{2} \times 2.99792^2] &= \partial^2 u / \partial x^2 \\
 \int \partial^2 u / \partial x^2 &= \cos \theta \\
 \cos \theta &= 0.7856 \\
 \theta &= 0.667 = G \\
 1/G &= 1.5 = \text{Mass Gap} \\
 \text{The Laplacian} \\
 \nabla^2 u &= \partial^2 u / \partial x^2 + \partial^2 u / \partial y^2 + \partial^2 u / \partial z^2 \\
 \partial^2 u / \partial t^2 &= c^2 \nabla^2 u \\
 1/\sqrt{2} &= 0.4233^2 \nabla^2 u \\
 \nabla^2 u &= 394 \sim 396 = 1/\text{Period } T
 \end{aligned}$$

**Wave Equation:**

$$\begin{aligned}
 \partial^2 E / \partial t^2 &= c^2 \nabla^2 E \\
 \text{Rearrange to the Clairaut Differential Equation:} \\
 c^2 \nabla^2 E - \partial^2 E / \partial t^2 &= 0 \\
 \text{But we know:} \\
 \partial^2 E / \partial t^2 &= G \\
 \text{So,} \\
 c^2 \nabla^2 E - G &= 0 \\
 E &= Mc^2 \\
 &= (-1)c^2 \\
 &= -c^2 \\
 c^2 \nabla^2 E - G &= 0
 \end{aligned}$$

**Aside:**

$$\begin{aligned}
 \nabla &= \partial / \partial x + \partial / \partial y + \partial / \partial z \\
 &= 3(\partial / \partial x^2) \\
 &= 3 \times (dM/dt)'
 \end{aligned}$$

**Conclusion**

The wave equation shows where the mass gap, the frequency and the density as well as the gravity equation wave equation come from.

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**Conflict of interest**

The author declares that there is no conflict of interest.

**References**

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