



## Key Mathematical Framework of MAM

---

### Multidimensional Harmonic Transform (MHT)

The MHT serves as the foundation for Multidimensional Harmonic Mathematics (MAM), enabling the analysis and identification of resonant patterns in complex systems across multiple dimensions.

$$H(\mathbf{k}) = \int_{\mathbb{R}^n} f(\mathbf{x}) e^{-i2\pi\mathbf{k}\cdot\mathbf{x}} d\mathbf{x}$$

- **Context:** The MHT maps functions  $f(\mathbf{x})$  from their original space into a harmonic domain  $\mathbf{k}$ , revealing vibrational and structural patterns.
  - **Applications:** Modeling energy and vibrational distributions in cosmology, quantum systems, and telecommunications.
- 

### Energy Conservation Equation Between DE and MW

This equation encapsulates the dynamic interplay between **Dark Energy (DE)** and **Mother Waves (MW)**, ensuring energy conservation in multidimensional resonant systems.

$$E_{DE} + E_{MW} = C$$

- **Context:**  $E_{DE}$  represents the energy contribution from Dark Energy,  $E_{MW}$  from Mother Waves, and  $C$  denotes the conserved total energy.
- **Applications:** Modeling energy stabilization processes in the Grand Containment (GC) and other resonant frameworks.

## Frequency-Resonance Relationship

A fundamental relationship connecting the **Cosmic Frequency (CF)** with harmonic resonances in various scales.

$$\lambda \cdot f = c$$

- **Context:** Where  $\lambda$  is the wavelength,  $f$  is the frequency, and  $c$  is the propagation constant of the harmonic system.
  - **Applications:** Analyzing wave propagation and resonance in cosmological and quantum systems.
- 

## Vibrational Interaction Equation

This equation models the interaction between resonances at different scales, integrating the influence of **DE**, **MW**, and **CF**.

$$\Psi(\mathbf{x}, t) = A \sin(2\pi ft + \phi) + Be^{-\alpha t}$$

- **Context:** Represents the combined effects of harmonic oscillations ( $\sin(2\pi ft + \phi)$ ) and damping factors ( $e^{-\alpha t}$ ).
  - **Applications:** Simulating vibrational interactions in biological systems, energy fields, and transitions within the **GC**.
- 

## Relationship with the Grand Containment (GC)

The **MAM framework** plays a pivotal role in the **Grand Containment (GC)** theory by modeling cosmic dynamics, vibrational interactions, and energy stabilization across scales. These equations have been instrumental in analyzing transitions between micro and macro scales, illustrating the interconnectedness of resonant systems.

---


## RECOMMENDED LICENSE




### Creative Commons Attribution-NonCommercial- ShareAlike 4.0 International

This license requires that reusers give credit to the creator. It allows reusers to distribute, remix, adapt, and build upon the material in any medium or format, for noncommercial purposes only. If others modify or adapt the material, they must license the modified material under identical terms.

 **BY:** Credit must be given to you, the creator.

 **NC:** Only noncommercial use of your work is permitted.

Noncommercial means not primarily intended for or directed towards commercial advantage or monetary compensation.

 **SA:** Adaptations must be shared under same terms.

Multidimensional Harmonic  
Mathematics (MAM) © 2024 by Balbino  
Olveira Laranga is licensed under CC BY-  
NC-SA 4.0 