The NKTg Law on Varying Inertia

Author: Nguyen Khanh Tung
ORCID: https://orcid.org/0009-0002-9877-4137
Email: traiphieu.com@gmail.com
Website: https://traiphieu.com

Abstract

The NKTg Law on Position and Varying Inertia Interaction introduces a new physical principle describing the motion tendency of objects based on the interplay between position, velocity, and mass. This law proposes a novel analytical framework centered on two core multiplicative quantities, offering a fundamentally different perspective from classical mechanics.

Introduction

The motion tendency of an object in space depends on the relationship among its position, velocity, and mass:

NKTg=f(x,v,m)\text{NKTg} = f(x, v, m)NKTg=f(x,v,m)

Where:

- xxx represents position or displacement relative to a reference point.
- vvv is the velocity.
- mmm is the mass.

Core Formula

The motion tendency is determined by two key multiplicative quantities:

$NKTg_1=x\times p\text{NKTg}_1 = x \times pNKTg_1=x\times p$ $NKTg_2=dmdt\times p\text{NKTg}_2 = \frac{dm}{dt} \times pNKTg_2=dtdm\times p$

Where:

- p=m×vp = m \times vp=m×v is the linear momentum.
- dm/dtdm/dtdm/dt is the rate of change of mass with respect to time.

- **$NKTg_1$** represents the interaction between position and momentum.
- **$NKTg_2$** represents the interaction between varying mass and momentum.

The unit of both $NKTg_1$ and $NKTg_2$ is **NKTm**, denoting a unit of varying inertia.

Physical Meaning

The signs and magnitudes of **$NKTg_1$** and **$NKTg_2$** dictate the object's motion tendency:

- If **$NKTg_1 > 0$**: the object tends to move away from the stable state.
- If **$NKTg_1 < 0$**: the object tends to move towards the stable state.
- If **$NKTg_2 > 0$**: varying mass supports the motion.
- If **$NKTg_2 < 0$**: varying mass resists the motion.

Definition of Stability

In this law, a *stable state* refers to the condition where position (xxx), velocity (vvv), and mass (mmm) interact to maintain the structural integrity of motion, preventing uncontrolled behavior and preserving the inherent motion pattern.

Significance

This law provides a new conceptual approach to motion analysis, especially in systems with varying mass, potentially opening avenues for further applications in astrophysics, mechanics, and dynamic system modeling.

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