Nepalese Mathematical Researcher Miraj Pathak With His Groundbreaking Concepts

The young mathematician's groundbreaking theories provide new frameworks for understanding numerical interactions, bridging abstract number theory with practical mathematical analysis.

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Research Article

Pathak's Theory of Number Interaction (PTNI)

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Abstract

Pathak's Theory of Number Interaction (PTNI) introduces a new idea for understanding how numbers interact. It defines an" interactive strength" between two numbers based on their difference, providing a novel framework for thinking about number relationships with simple mathematical rules applicable to various kinds of numbers.

1. Introduction

We tend to think of numbers in terms of easy operations like adding, subtracting, multiplying, and dividing. But what if we thought of numbers not just in terms of these operations, but in terms of how they interact with each other, like physical bodies pushing or pulling? Pathak's Theory of Number Interaction (PTNI) is a new way of thinking about these interactions.

In PTNI, we define an interactive strength as a function of the difference between two numbers. The bigger the difference, the weaker the interaction. By altering how we define this difference, we can simulate various types of number interactions. Just like forces in physics depend on the distance between objects.

Additionally, the notation for the strength is N, also referred to as Numo-tract.

2. The number interaction theory

To define how two numbers interact, we start with a simple idea: the strength between two numbers depends on their difference. In the same way that physical forces are often described as inversely proportional to distance raised to a power, we begin with the idea:

$$N \alpha \frac{1}{|a-b|^n} \tag{1}$$

To convert this proportionality into an equation, we introduce a constant of proportionality, denoted by k, giving us:

$$N(a,b) = \frac{k}{|a-b|^n} \tag{2}$$

Here:

- a and b are the two numbers we are comparing.
- k is a constant that scales the interactive strength.
- n is an exponent that tells us how quickly the interaction gets smaller as the difference increases.
- $|a - b|$ is the absolute difference between the numbers, always positive.

This formula tells us that the interactive strength gets weaker when the numbers are farther apart. The exponent n tells us how quickly the strength decays as the difference increases [1].

3. Special cases

There are some interesting cases where the interaction behaves in unique ways.

3.1. When one number is very small

If one number becomes very small, say $a \to 0$, and b is much larger than a, the difference $|a - b|$ approaches $|b|$, and the strength behaves as follows:

$$N(0,b) = \frac{k}{|0-b|^n} = \frac{k}{|b|^n} \tag{3}$$

Thus, as a approaches zero, the strength between 0 and b behaves similarly to the strength between b and any small number. The magnitude of the interaction depends on b raised to the power n.

3.2. When one number is very large

If one number is much larger than the other, the difference

Kathmandu, Bagmati Feb 11, 2026 (Issuewire.com) - Miraj Pathak, an independent mathematical researcher based in Nepal, is causing a sensation in the realm of number theory and theoretical mathematics because of his pioneering studies on the interaction of numbers.

Pathak is the founder of Miraj's Cubo and Miraj's Numo, which are new algebraic identities representing the sum and difference of powers equated to the differences of squares through a new parameter termed Miraj's Change. These papers are already published by international journals like International Journal of Advanced Research Miraj's Cubo - Int. J. Adv. Res. 13(03), 20-23 and Annals of Mathematics and Physics Miraj's Numo - Ann Math Phys. 2025;8(4):117-120. His papers are also listed in renowned academic library catalogs worldwide, including Harvard University Library (HOLLIS) Harvard Hollis Library - Miraj Pathak, The Royal Library of Denmark [DET KGL BIBLiOTEK] The Royal Library, Denmark - Miraj Pathak, National University of Singapore Library, University of Washington Libraries, and WorldCat.

Continuing the work built on these achievements, Pathak developed the Pathak Theory of Number Interaction (PTNI) based on the idea of Interact, which encompasses the measurement of the interaction potential of numbers. It also came up with the equation for net strength, which allows for mathematical treatment of the subject. PTNI has been published and recognized internationally in various journals, including the International Journal of Physics Research and Applications Pathak's Theory of Number Interaction - Int J Phys Res Appl. 2025; 8(6): 169-171. Taking the subject and developments one step ahead, the author has come up with the hypothesis for Pathak Continuum Compression (PCCH) and is still working in this field.

Besides his research activities, Pathak has achieved great success in competitive examinations within Nepal, achieving the prestigious award of All Nepal Rank 7 in the National Mathematics Olympiad competition. He has also been a finalist in the 12th National Astronomy Olympiad competition conducted by the Nepal Astronomical Society, receiving the prestigious award of All Nepal Rank 28. Furthermore, he has also appeared in the prestigious CIERA REACH Program in the USA, under a full scholarship in the field of research in theoretical physics and astrophysics.

"Pathak continues his pursuit of original theoretical research while seeking to make the abstract mathematics both applicable and relevant. His research not only contributes in a meaningful way to the field of number theory, but it also positions the young scholar as a leader and authority who is capable of making a global impact within the discipline and beyond."


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RESEARCH ARTICLE

MIRAJ'S CUBO: A COMPREHENSIVE EXPLORATION OF RELATION OF CUBIC IDENTITIES WITH SQUARE NUMBERS

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Manuscript Info

Abstract

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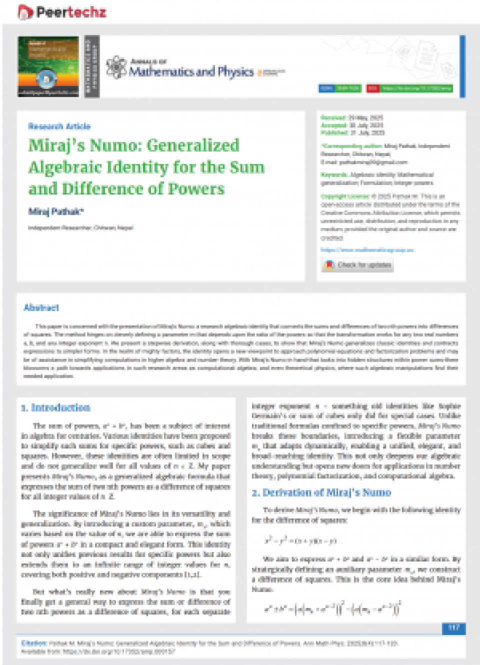
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Annals of Mathematics and Physics

Research Article

Miraj's Numo: Generalized Algebraic Identity for the Sum and Difference of Powers

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Abstract

1. Introduction

2. Derivation of Miraj's Numo

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