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The Proof of The Riemann Hypothesis

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Abstract

The proof of the Riemann Hypothesis is presented in three different ways in this paper. By using One of the Euler's Equation, some Matrices representations of the Riemann Zeta Equation are derived and through Fourier transformation of the Meromorphic Equation, an equivalent Equation for $\varepsilon(t)$, the analytic continuation formula of the Riemann Zeta Equation, is obtained.

The Hilbert-Poly Conjecture and the Berry-Keating Conjecture as it applies to quantum mechanics, are investigated and shown to be true through the representation of the obtained matrices as $H_{cl} = XP$, where X and P are position (one of the Pauli Spin Matrices) and momentum Matrices respectively, for $\zeta(z)$ and $\varepsilon(t)$.

A new representation of the Integral component of the $\zeta(z)$ is derived and the connecting link between the Riemann Zeta Function and the work of A.Selberg (1956), for which he won Wolf Prize in mathematics on; Harmonic analysis and discontinuous groups in weakly symmetric Riemannian spaces with applications to Dirichlet series is shown to be a generator of the imaginary components of the non-trivial zeros of the Riemann zeta function. The connections between the zeros of the Riemann zeta function, the prime and celestial Merida are also discussed.

Keywords: *Riemann Hypothesis; Euler's equation; Fourier series; Meromorphic Function. quantum mechanics; position/momentum matrices; Dirichlet series; Prime/Celestial Merida. Ope_taiwo3216@yahoo.com, Opeyemi.enoch@fuoye.edu.ng*

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Hilbert's foundations remain intact

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Abstract—Some of the seemingly important contributions made by Russell, Cantor and Gödel regarding the foundations of mathematics lose credibility when addressed at a more fundamental level which assumes language consists of symbols devoid of what they mean. Such an approach can reveal neglected assumptions which are of consequence when made explicit and which, in particular, mean that Hilbert in fact had no need to heed Gödel's revolutionary results regarding the foundations of mathematics.

Keywords—paradox; self-reference; foundations of mathematics

The Dawn of a New Era

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Abstract

Generalization of fields into isofields by R.M.Santilli has stimulated a corresponding generalization of all of 20th century mathematics and its application to mechanics. Santilli discovered new realizations of the abstract axioms of numeric fields with characteristic zero, based on an axiom-preserving generalization of conventional associative product and consequential positive-definite generalization of the multiplicative unit, and the resulting novel numeric fields are known as Santilli isofields and the elements are called as Isonumbers. Santilli Isomathematics and Isomechanics has been successfully applied to the representation of extended-deformable particles moving within physical media under Hamiltonian as well as contact non-Hamiltonian interactions. Additionally, Santilli discovered a second realization of the abstract axioms of a numeric field, with arbitrary (non-singular) negative definite generalized unit and related multiplication, today known as Santilli isodual isonumber that have stimulated a second covering of 20th century mathematics and mechanics known as Santilli isodual isomathematics and isodual isomechanics. The latter methods are used for the classical as well as operator form of antimatter in full democracy with the study of matter. In this paper, we present a comprehensive study of Santilli's epoch making discoveries of isonumbers and their isoduals along with their application to isomechanics and its isodual for matter and antimatter, respectively.

Keywords :- Isounit, Isofield, Isonumbers, Isodual isonumbers.

A Note Related to Levine's Closed Sets

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ABSTRACT. Levine's closed sets were applied to many characterizations in topological subjects. Meanwhile, many Authors studied Levine's closed sets and applications of Levine's closed sets in the papers. In this note, relations of a concept related to Levine's closed sets are researched.

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Hybridizing Hilbert Transformation by Artificial Neural Network to Detect Unbalance Rotor Parameters

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Abstract–

Unbalance as vital fault can damage or shut down important rotary systems such as gas turbine, compressors, and etc. To avoid this trouble, balancing process is very crucial although it is time consuming and costly. Thus, having a method which can predict unbalance location and parameters of that will be valuable and practical. This study represents a model can predict unbalance mass, radius and location of that based on hybridizing Hilbert Transformation and Artificial Neural Network model. Proposed model can acquire of these parameters with accuracy which is near to actual values.

Keywords: Hilbert Transformation, unbalanced rotor, eccentric mass and radius, artificial neural network, fault detection

Construction a New Differentiable Manifold Structure on Markov Matrices

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In this study, we constructed a new manifold structure on the set of Markov matrices. For this we used the solution of linear equation systems obtained from the set of Markov matrices.

Keywords: Markov matrix, manifold

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Statistical Convergence of Banach Valued Martingales

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Abstract— Continuously studied since its introduction, martingale theory is one of the central components of probability theory. Much of the work on Banach spaces done in the 1930's resulted from investigating how much of real variable theory might be extended to functions taking values in such spaces. In the 1960's, the theory of martingales of real or complex random variables has been extended by various authors to random variables taking values in a Banach space.

On the other hand statistical convergence has become an active area of research under the name of statistical convergence since 1990s of the last century. It has appeared in a wide variety of topics such as number theory, measure theory, trigonometric series, summability theory, in the study of strong integral summability and Banach spaces.

In this paper statistical convergence is used to obtain some new convergence theorems for Banach valued martingales of statistical Pettis integrable functions similarly to those in classical case which are well known for the Pettis integration. It is shown also an example of a martingale that is not convergent in usual meaning but is convergent by the statistical convergence.

Keywords: statistical convergence; martingale; st-Pettis integrable

“The Convergence of the Riemann Zeta Power Tower Function”

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Abstract

Over a century and half has passed when Bernhard Riemann hypothesized that the non-trivial roots of the Riemann zeta function $\zeta(s)$ all lie on the half-line $s = \frac{1}{2} + i\sigma$. In this paper the Zeta-function is iterated as a power tower and its properties are applied as an approach to an indication that the Riemann hypothesis might be true. It is known that complex valued Power towers converge under certain conditions to exponential power towers of entire functions. These properties can be used to resolve the Riemann Hypothesis. Combining the properties of Power towers and the Ramanujan Master theorem shows that the Riemann Zeta function converges to exponential functions only on the half-line.

Keywords

Riemann Hypothesis, Ramanujan, Master Theorem, Zeta, Power Towers, Convergence, Exponential Iterations.

Numerical simulation of pedestrian legform impactor to automotive bumper impact

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Abstract:

In the present study, a three-dimensional finite element lower legform is simulated and then validated on static and dynamic tests by three main criteria that are bending angle, shear displacement and upper tibia acceleration respectively. Important design parameters such as material, thickness and locating different parts of the front vehicle structure have been studied and improved to protect pedestrian from serious injuries. The lower legform and dynamic certification slugger is simulated by LS-DYNA software due to COMMISSION REGULATION (EC) No 631/2009. Finally, one B-CLASS automotive bumper and acceptable legform are used in front collision computer tests at three different distances from the center of the shield. It should be noted that all requirements related to pedestrian and vehicle collision tests are presented by EUROPEAN COMMISSION.

Keywords: Pedestrian protection, Legform impactor, Automotive bumper, LS-Dyna

Numerical Study of the Effect of Geometrical Changes on the Airfoil Aerodynamic Performance

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In this article, numerical and two dimensional study flow field around NACA 0012 airfoil with making geometrical changes is discussed. In order to investigate geometrical changes on airfoil and its effect on aerodynamic performance of the airfoil, design of making step on airfoil have studied. For this purpose, once step at upper surface and once simultaneously at both sides upper and lower surfaces of the airfoil, have considered. The calculations were performed at Reynolds number 160000 and lift and drag coefficients and lift to drag ratio at stepped airfoils with unmodified NACA 0012 airfoil is compared. Also streamlines and separation of flow around airfoils and stall angle have discussed. Results indicate significant changes in airfoil aerodynamic performance as with making step at upper surface airfoil stall angle is delayed and lift to drag ratio is increased at some angles of attack. Also with making step at both sides upper and lower surfaces of the airfoil, lift coefficient increased compare to airfoil without step, especially at low angles of attack.

Riemann Hypothesis Proof

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ABSTRACT:

The Riemann zeta function $\zeta(s)$ is a function whose argument s may be any complex number other than 1, and whose values are also complex. It has zeros at the negative even integers; that is, $\zeta(s) = 0$ when s is one of $-2, -4, -6, \dots$. These are called its trivial zeros. However, the negative even integers are not the only values for which the zeta function is zero. The other ones are called *non-trivial zeros*. The Riemann hypothesis is concerned with the locations of these non-trivial zeros, The real part of every non-trivial zero of the Riemann zeta function is $1/2$.

$$\zeta(s) = \begin{cases} \sum_{n=1}^{\infty} \frac{1}{n^s} & \Re(s) > 1 \\ \frac{1}{s-1} + \sum_{n=1}^{\infty} \int_n^{n+1} \left(\frac{1}{n^s} - \frac{1}{x^s} \right) dx & 0 < \Re(s) \leq 1 \\ 2^s \pi^{s-1} \cos \frac{\pi(1-s)}{2} \Gamma(1-s) \zeta(1-s) & \Re(s) < 0 \end{cases}$$

- $\zeta(s)$ has “trivial” zeros at the negative even integers $\{-2, -4, -6, \dots\}$.
- $\zeta(s)$ has zeros in the critical strip $0 < \Re(s) \leq 1$, which are symmetric about the line $\Re(s) = \frac{1}{2}$.
- Riemann believed all zeros are on the line $\Re(s) = \frac{1}{2}$.

The Riemann hypothesis proof is demonstrated in a simple way. In this paper Zeta function connected with the distribution of prime numbers. This paper presents laws and simple ways to find all the prime numbers. Finding of prime factors for a semi-prime.

Keywords : Riemann zeta function , Primes , Euler's equation , Complex number , Graphs of trig functions .

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