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ABSTRACTS

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Mathematics

ON THE THEORY OF HYPERCOMPLEX N-TUPLE SPACES II - GENERALIZED R.FUETER'S POLYNOMIALS - Hiroyoshi SASAYAMA

Abstract. R. Fueter introduced left and right regular polynomials $p_{n_1 n_2 n_3}(z)$ and showed any function $f(z)$, which is regular at the origin, can be expanded in the uniformly convergent series:

$w = f(z) = \sum_{m=0}^{\infty} \sum_{(n_1+n_2+n_3=m)} c_{n_1 n_2 n_3} p_{n_1 n_2 n_3}(z)$. In his paper [II.1] (1963) on the

theory of quaternion functions of a quaternion variable $z = \sum_{k=0}^3 x_k i_k$, were considered

the polynomials

$$p_{n_1 n_2 n_3}(z) \equiv \frac{1}{m!} \sum_{(k_r)} (x_{k_m} - i_{k_1} x_0) (x_{k_2} - i_{k_2} x_0) \dots (x_{k_m} - i_{k_m} x_0), (n_1 + n_2 + n_3 = m)$$

Keywords: Multilinear function extended to the left, to the right from the ordinary symmetric multilinear functions, Right-Left generalized R.Fueter's polynomials..

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A GENERAL THEOREM OF STABILITY FOR THE CAUCHY'S EQUATION

Liviu CĂDARIU

Abstract. In this paper, we obtain a slight generalization to β -normed spaces of the Theorems of Rassias, Gajda and Kim & Jun concerning the stability of Cauchy's functional equation.

Keywords: β -normed spaces

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A METRIC PROPERTY OF SPECIAL SIMPLEX

Ligia-Loreta CRISTEA

Abstract. In this paper we generalise a wellknown metric property of rectangular triangles with congruent catheti for *special s-simplices*, $s \geq 3$.

Keywords: special s-simplices

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The $\sqrt{\cdot}$ -UNIFORMITIES ON PROBABILISTIC METRIC STRUCTURES-VALUED FUNCTION SPACES

Octavian LIPOVAN

Abstract. In [9] the author defines a general form of submeasure with probabilistic structure in such way that the topological ring of sets introduced is a uniform space. As particular cases some probabilistic generalizations of the submeasure concept from [8] are obtained. The probabilistic submeasure are introduced for modeling those situation in which we have only probabilistic information about the measure of the set.

In this paper, using probabilistic generalizations of submeasure notion, there are introduced some uniformities on probabilistic metric structures-valued function spaces.

Keywords: probabilistic generalizations of submeasure notion; metric structures

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INÉGALITÉS INTÉGRALES (II)

Gheorghe M. TUDOR

Abstract. Dans cet articles, nous avons en vue quelques résultats relatifs aux inégalités concernant des polynômes trigonométriques, obtenus certaines ouvrages (voir par exemple [2], [3], [4]). Ces inégalités nous donneront la possibilité d’obtenir quelques inégalités intégrales, a notre avis, intéressantes..

Keywords: polynômes trigonométriques,

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DISTRIBUTIONAL FUNCTIONAL IDENTITIES CHARACTERIZING QUADRATIC POLYNOMIALS

Mihai NEAGU and Dan POPESCU

Abstract: Author studies three distributional functional identities which characterize quadratic polynomials utilizing notion of direct extensions and direct sections of distributions. In the next papers, this results will be generalized.

Keywords: distributional functional identity; quadratic polynomials

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Physics

STUDIES OF STRUCTURAL DISTORTION OF NaZnF_3 PEROVSKITE

A.RATUSZNA , J. RYBCZYŃSKI, Ph. DANIEL

Abstract. Perovskite – like crystal, NaZnF_3 has been studied by the powder X-ray diffraction technique at the room temperature because the measurements of the lattice parameters versus temperature have not shown any changes of the symmetry.

The monoclinic distortion caused by the tilting of ZnF_6 octahedra, type of $a^-b^+a^-$, distortion of these octahedra and displacement of the sodium cations from their special positions has been described in the higher symmetry, orthorhombic with the lattice parameters: $a=5.581(3)\text{\AA}$, $b=7.766(2)\text{\AA}$, $c=5.407(2)\text{\AA}$.

Keywords: powder X-ray diffraction, Rietveld profile refinement, perovskite structures, NaZnF_3 ,

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THE RELATIVISTIC DOPPLER EFFECT WITHOUT CLOCK SYNCHRONIZATION

Abraham UNGAR

Abstract. The synchronization of distant inertial clocks and the measurement of the one-way speed of light (or any signal) presuppose one another. According to Reichenbach, clock synchronization is a matter of convention and, hence, the one-way speed of light is immeasurable. A recently developed formalism for dealing with special relativity theory without clock synchronization, as viewed by Reichenbach, is applied here to the study of the

Doppler effect without clock synchronization. In accordance with the immeasurability of one-way velocities, it is shown here that Doppler effect is synchrony free.

Keywords: Doppler effect

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ZERO, INFINITE AND NEGATIVE RECEPTION PERIODS OF ACOUSTIC SIGNALS? WHAT DOES THAT MEAN?

Bernhard ROTHENSTEIN, Ioan ZAHARIE

Abstract. The behaviour of the formulas describing the Doppler shift in the case of source and observer moving with sonic and supersonic velocities is investigated. The occurrence of zero, infinite and even negative reception period is explained.

Keywords: Doppler shift, observer

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A RELATIVISTIC SPACE-TIME DIAGRAM FOR PHOTOGRAPHERS IN RELATIVE MOTION

Bernhard ROTHENSTEIN, Doru PĂUNESCU, Floricica BARVINSCHI

Abstract. A relativistic space-time diagram is proposed, displaying in true values the space-time coordinates (in Cartesian and in polar coordinates as well) of “photographed” events, as detected from the reference frame where the point is at rest and from inertial reference frames relative to which it moves with constant speed parallel to the common $OX(O'X')$ axes. The diagram is used in order to find out the photographed shape of lines parallel to the $OY(O'Y')$ axes and of circles the center of which are located somewhere in the $(X'O'Y')$ plane.

Keywords: space-time

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PHOTON-ADDED COHERENT STATES OF THE HARMONIC OSCILLATOR-REVISITED

Dušan POPOV

Abstract. We examine some characteristics of photon-added coherent states (PACSS), i.e. normalization, non-orthogonality, resolution of the unity, as well as the photon-added thermal states (PATSS). We find a more compact expression of the integration measure in the resolution of the unity, by using the Meijer's G-function. Also, we find the diagonal representation of the density operator and, implicitly, the Q-and P-distribution functions.

Keywords: photon-added,

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SOME ASPECTS OF THE MAGNETIC BEHAVIOUR OF LiZn FERRITE

I. HRIANCA, M. CRISTEA, M. BOLDAN, A. ZAMFIR, C. CAIZER

Abstract. The paper presents some experimental aspects concerning the rotational hysteresis of LiZn ferrite with Bu_2O_3 admixture synthesized by ceramic method. It was followed the effect curves of rotational hysteresis for ferrite samples (disc-shaped) that are rotated (3-50 rot/s) in a static magnetic field (2-100 kA/m) as well as the influence of samples' peculiarities on effect curves. Also the magnetic hysteresis loops of ferrite samples by magnetoinductive method, at 50 Hz were registered.

Keywords: rotational hysteresis, LiZn ferrite, magnetic hysteresis loop

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THE APPLICATION OF THE SYMMETRY GROUPS THEORY ON THE STUDY OF THE F COLOR CENTER ENERGY LEVELS IN ALKALI HALIDES

Liliana LIGHEZAN

Abstract. In this paper, using the symmetry groups theory, a scheme of the F color center electronic energy levels in alkali halides has been represented, specifying the degeneracy, the symmetry properties of those levels and the symmetry of the wave functions of the states associated with these levels. The influence of the crystal lattice vibrations on the electronic energy levels has also been analyzed.

Keywords: alkali halides,

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