CONTENTS
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MATHEMATICS

PHYSICS

SOME PROPERTIES OF UPPER AND LOWER CLOPEN CONTINUOUS MULTIFUNCTIONS

Erdal EKICI and Valeriu POPA

Abstract. In this paper, we introduce and study the notion of clopen continuous multifunctions. Characterizations and properties of upper (lower) clopen continuous multifunctions are obtained. The relationship between upper (lower) clopen continuous multifunctions and upper (lower) continuous multifunctions are also discussed.

Keywords: multifunction, clopen continuity, 0-dimensional space.

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L'EQUATION DIOPHANTIENNE $x_1^{x_1} \cdot x_2^{x_2} ... x_k^{x_k} = \omega^{\omega^P}$ (IV)
Gheorghe M. TUDOR

Résumé. Pour l'équation signalée plus haut, nous envisagerons quelques problémes relatifs aux solutions concernant des nombres entieres positifs. Plus précis, on étudie cette équation en procedant de la même maniè qu'on a fait dans le cas des équations considerées dans les ouvrages [5], [6], [7]. C'est ceci le but de ce travail.

Keywords: Équation Diophantienne

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A MINIMAX PROPERTY FOR A CLASS OF PERFECT INFORMATION GAMES

Gabriela CRISTESCU and Codruţa STOICA

Abstract. A minimax theorem, accompanied by purification result, is proven for perfect information games, other cases than those satisfying the conditions, which Kalmar stated in [5] for chess. We shall refer to the so-called "tube condition". The concept of equilibrium point with respect to a given set is used in order to forward looking prove the main theorems.

Keywords: Extended form perfect information game, saddle – point of a function with respect to a set, tube shaped game, weakly dominated row.

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THE VORONOVSKAYA THEOREM FOR THE SCHURER-STANCU OPERATORS
Dan BĂRBOSU

Abstract. The Schurer-Stancu operators are defined at (1.1). We establish a Voronovskaja type theorem for these operators. Also, we prove a similar result for the bivariate Schurer-Stancu operators.

Keywords: Schurer-Stancu operator; divided difference; Voronovskaja theorem; bivariate operator.

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REPRODUCING KERNEL LOYNES SPACES
Loredana CIURDARIU

Abstract. In this note we generalize some results regarding reproducing kernel spaces obtained in [3] for $Z = B(X, X^*)$ and $Z = \Delta(X, X^*)$ to an arbitrary pre-Loynes Z-space. For a given Z-valued positive definite kernel Γ we construct a Loynes Z-space H_Γ which admits Γ as a reproducing kernel, using the functional completion as in [3], Theorem 2.2.10. As an application another construction of completion of a pre-Loynes space is given.

Keywords: Reproducing Kernel, Loynes Z-space, positive definite kernel

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CONSTRUCTION OF A MULTIRESOLUTION ANALYSIS IN A LATTICE FRAMEWORK
Radu-Lucian LUPŞA

Abstract. A generalization of multirezolution analysis of the wavelets theory is defined in this paper, followed by the construction of such an object in complete lattices. It is shown that the classical morphological opening and closure operators are fitted in this framework as particular cases. This construction introduces a property called

pseudosublattice for a subset of a complete lattice. This type of structure leads to an intermediate between a subset that is complete lattice and a sublattice.

Keywords: Wavelets, multiresolution.

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ON A PARTICULAR STABILITY CRITERION IN A BINARY MIXTURE PROBLEM
Ioana DRAGOMIRESCU

Abstract. A new method to obtain the stability bound for a binary mixture problem in the case of competing effects when the Rayleigh number is equal to the Schmidt number is presented. The stability criterion was deduced explicitly in terms of the physical parameters involved in the problem.

Keywords: Stability criterion, Prandtl number, binary mixture.

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ANALYSIS OF A DYNAMICAL SYSTEM DERIVED FROM THE LORENZ SYSTEM
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Abstract. In this paper we study the stability and bifurcation of equilibria of a time-continuous dynamical system exhibits a Hopf bifurcation which for particular parameter values is subcritical.

Keywords: Hopf bifurcation

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Physics

SOME THERMODYNAMIC PROPERTIES OF THE RELATIVISTIC FERMIONS OSCILLATORS
Nicolina POP

Abstract. The behaviour of the chemical potential and specific heat, using the evaluation of the thermodynamic grand-canonical potential characterizing relativistic fermionic oscillators as the basic starting point, is analyze and are obtained approximative analytical and numerical results.

Keywords: relativistic fermionic oscillators, Fermi-Dirac statistics, thermodynamic properties.

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FROM THE SPACE DIMENSION TO TWO SPACE DIMENSION IN SPECIAL RELATIVITY
Bernhard ROTHENSTEIN

Abstract. Authors derive the Lorentz-Einstein transformations for the space-time coordinates from a one-space dimension approach. They add to them the invariance of distances measured perpendicular to the direction of relative motion. We prove that the transition from the one-space dimension approach to the two-space dimension approach does not affect the transformation equation for the time coordinate.

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THE REDUCTION OF CHARGE PROPAGATION IN NANOROAD
V. SAJFERT and B. TOŠIĆ

Abstract. The space distributions of electron concentrations in metallic quantum rod are analyzed in the work. The Green's functions method, adapted for broken symmetry structure analyses, was applied. The main conclusion of this analysis is non-isomorphism of configuration-momentum space transition. Since the configuration space is wider than momentum one, auto-reduction of structure of structure takes place. In 3x3 quantum rod the charge carriers propagate along four lines, only. There are nine structures, which are conductive. In these substructures specific skin effect takes place. The results represent qualitative difference between nano and corresponding bulk structure and could have technological applications.

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TEACHING SPECIAL RELATIVITY AFTER 100 YEAR FROM ITS FOUNDATION
George J.SPIX and Bernhard ROTHENSTEIN

Abstract. The authors are aware of the fact that during 100 years of teaching special relativity some of our derivations could be found in modern textbooks or journals but consider that the way in wich they introduce the subject has some degree of originality.

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