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Aux lecteurs

ELENA POPOVICIU
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L'Édition de cette année du Séminaire Tiberiu Popoviciu d'Équations Fonctionnelles, Approximation et Convexité (STPEFAC) évoque un moment important de l'activité de l'Institut de Calcul de Cluj, de l'Académie Roumaine. En 1958 cet Institut fondé et dirigé par l'académicien Tiberiu Popoviciu, a organisé le Symposium de Cybernétique (Le Premier Symposium National de Cybernétique de Roumanie). Ça fait 50 ans depuis ce temps-là.

Le lecteur de ces lignes devra revenir, par la pensée aux années 1950-1960. Il devra se souvenir de cette période ou, s'il n'a pas vécu pendant cette époque-là, il devra s'informer, se documenter sur la situation existante par rapport aux orientations concernant la pensée, la recherche scientifique, la culture, l'art et d'autres domaines où l'homme peut prouver sa force de création. Il faut s'imaginer tout ça au niveau mondial mais aussi au niveau de notre Centre Universitaire, Cluj.

Durant la période mentionnée des pas courageux étaient déjà faits dans différents pays, dans l'étude et la construction des machines rapides de calcul.

Celles-ci étaient utilisées avec succès dans la résolution de certains problèmes théoriques ou à caractère applicatif. Nous pensons tout

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Two-dimensional Total Palindrome Complexity

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ABSTRACT. We initiate a comparative study of the properties of total palindrome complexity for binary words and arrays. From this point of view, the HV-palindrome complexity for arrays seems to be more appropriate than the C-palindrome one. We prove also a theorem for the average number of HV-palindromes in arrays.

KEY WORDS: arrays, palindromes, total palindrome complexity

MSC 2000: 68R15

1 Introduction

Several authors have studied the palindrome complexity of infinite words (see [1], [5], [13] and the references therein). Similar problems related to the number of palindromes are important for finite words too. One of the reasons is that palindromes occur in DNA sequences (over 4 letters) as well as in protein description (over 20 letters), and their role

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The Generalised Complex of Multi-ary Relations and its Homologies

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ABSTRACT. The complex of multi-ary relations \mathcal{K}^n is defined, in a more natural way than it was defined in [14], [26], [34], and the groups of homologies and co-homologies of the \mathcal{K}^n , over the group of integer numbers, are constructed. The used methods for these constructions are, in a big part, analogical with classical methods [1], [18], [29], and, at the same time, in some cases, they are based on methods from [14], [26]. Important and original is application of multi-ary relations of a set of objects in homologies constructing, that allowed to extend areas of theoretical researches and practical applications in many domains.

1 The generalised complex of multi-ary relations

The notion of complex of multi-ary relations, over an arbitrary set of elements, was presented first in [26], for which was constructed the

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On the Deformation of a Thin Thermoelastic Plate

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ABSTRACT. The deformation of a thin thermoelastic plate has been often examined in the literature mostly because it could exhibit a bifurcation behavior when subjected to a through-thickness-graded thermal, or other inelastic, strain. We perform a geometric characterization of the deformation and verify the predictions by comparison with a finite element simulation.

KEY WORDS: porous plates, elastic plates

MSC 2000: 74A10, 74A15

1 Introduction

Thin thermoelastic porous plates are encountered in many situations of engineering interest and many problems of great applicability arise in

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On the Extension of the Function Beta Using Neutrices

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ABSTRACT. In this work we extend the Euler's function of the first kind $B(p, q)$, for each p, q which differ from a non-positive integer, using the neutralized integrals. In this way, we obtain the usual extension of $B(p, q)$ in an unitary form and its relation with the extended Gamma function [3].

KEY WORDS: Extended Euler's Functions, Neutralized Integrals.

MSC 2000: 33B15

1. The functions $\Gamma(p)$ and $B(p, q)$ of Euler are defined for each $p, q \in \mathbf{R}$, which differ from a non-positive integer, by the formulas

$$(1) \quad \Gamma(p) = \int_0^{\infty} t^{p-1} e^{-t} dt, \text{ if } p > 0,$$

$$(2) \quad \Gamma(p) = \frac{\Gamma(p+n)}{p \cdot \dots \cdot (p+n-1)}, \text{ if }]-n, -n+1[, n \in \mathbb{N}^*.$$

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E-Rough Analysis on Undirected Networks

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ABSTRACT. Rough analysis is a new concept introduced by H. X. Phu since 2001. We try to develop this concept from undirected networks.

KEY WORDS: E-r-convergence

1 Introduction

We firstly recall the definitions of undirected networks as metric space introduced in [1] by Dearing and Francis. We consider an undirected, connected graph $G = (W, A)$, without loops or multiple edges. To each vertex $w_i \in W = \{w_1, \dots, w_m\}$ we associate a point v_i from an euclidian space X . This yields a finite subset $V = \{v_1, \dots, v_m\}$ of X , called the vertex set of the network. We also associate to each edge $(w_i, w_j) \in A$ a rectifiable arc $[v_i, v_j] \subset X$ called edge of the network. We assume that any two edges have no interior common points. Consider

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Nonresonance Theory for Semilinear Operator Equations under Regularity Conditions

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ABSTRACT. A general nonresonance theory of semilinear operator equations under regularity conditions is developed. Existence of weak solutions (in the energetic space) is established by means of several fixed point principles. Typical applications to elliptic equations with convection terms are presented.

KEY WORDS: nonlinear operator equation, fixed point, nonresonance, eigenvalues, energetic norm, elliptic equation.

MSC 2000: 47J05, 35J65

1 Introduction and Preliminaries

In this paper we present existence results for the problem

$$(1.1) \quad \begin{cases} Au = cu + F(u, Su) \\ u \in H_A, \end{cases}$$

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On Approximation by Bernstein Operators in the Knots

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ABSTRACT. We study the order of approximation of bounded functions by Bernstein operators, in the knots $\frac{k}{n}$, $0 \leq k \leq n$, in terms of second order modulus of continuity

KEY WORDS: Bernstein operators, second order modulus

MSC 2000: 41A36, 41A10, 41A25

1 Introduction

Denote by $B[0, 1]$, the space of bounded real functions on the interval $[0, 1]$, with the sup-norm: $\|\cdot\|$ and denote by $C[0, 1]$ the subspace of continuous functions. We denote the monomial functions $e_j(t) = t^j$, $j = 0, 1, 2, \dots$ and let Π_1 the set of linear functions.

The Bernstein operators $B_n : B[0, 1] \rightarrow \mathbf{R}^{[0,1]}$, $n \in \mathbf{N}$ are given by:

$$(1.1) \quad B_n(f, x) = \sum_{j=0}^n p_{n,j}(x) \cdot f\left(\frac{j}{n}\right), \quad f \in B[0, 1], \quad x \in [0, 1],$$

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Exponential Dichotomy and Trichotomy for Skew-Evolution Semiflows in Banach Spaces

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ABSTRACT. The paper emphasizes the properties of exponential dichotomy and exponential trichotomy for skew-evolution semiflows in Banach spaces, by means of evolution semiflows and evolution cocycles. The approach is from uniform point of view. Some characterizations which generalize classic results are also provided.

KEY WORDS: Key Words: evolution semiflow, evolution cocycle, skew-evolution semiflow, dichotomy, trichotomy

MSC 2000: MSC 2000: 34D09

1 Preliminaries

The exponential dichotomy is one of the basic concepts in the theory of dynamical systems and plays an important role in the study of stable

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On Some Stochastic Balanced Optimization Problems

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ABSTRACT. The purpose of this paper is to investigate several stochastic balanced discrete optimization problems. We show that these stochastic problems can be solved efficiently if some associated deterministic (bottleneck) problems can be solved efficiently. We consider two particular cases of the generalized balanced optimization problem (with difference and ratio objectives), for which we propose minimum-risk stochastic models as well as Kataoka stochastic models. We show that these particular stochastic balanced optimization problems are equivalent with some deterministic optimization problems, for which we propose a sequential decomposition procedure.

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Retroperitoneal Nephroureterectomy as a Viable Alternative of Treatment for Upper Tract Transitional Cell Carcinoma

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ABSTRACT. Nowadays, the standard treatment for upper tract transitional cell carcinoma is open nephroureterectomy, by double lombar and iliac approach, with perimeatic bladder cuff excision.

The main objective of this paper is to evaluate the opportunity of laparoscopic nephroureterectomy approach for upper tract transitional cell carcinoma (UTCC) and to compare the results with the conventional surgery.

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Molecular Dynamics Study of Self-association of Death Receptor 5 Molecules in Absence of Cytokine Tumor Necrosis Factor Related Apoptosis Inducing Ligand (Apo2L)

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1 Introduction

Tumor necrosis factor (TNF) Related Apoptosis Inducing Ligand, shortly TRAIL of which other name is Apo2L, is an important cytokine molecule from the TNF superfamily which induce apoptosis (cell death) in certain malignant cells and HIV infected T-cells, while healthy cells

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**The Workshop for Gold at Cheile Turzii -
Peștera ungureasă/Peștera caprelor.
Archaeological excavations 2003-2004**

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Peștera ungureasă/Peștera caprelor is located approximately in the middle of Cheile Turzii, on the right bank, at the basis of an impressive rock wall, named the "Hawks' Wall", about 100 m above the Hășdate rivulet. The cave has 20 m wide, 12-15 m high, and a slightly ascendant slope; some sort of lateral niches can be seen in the interior of the cave. We believed that the cave was used only during warm seasons for special purposes.

Although the cave is known from the end of the XIX the century, the more intensive research is due to N. Vlassa and to Gh. Lazarovici. The 2003-2004 researches aimed at realizing a clear stratigraphic profile that would allow us to decide upon the future investigation methods of the cave. We have dug a small surface (aprox. 2 m²), all the resulting

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A Framework for Collaborative Systems

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ALIN MIHĂILĂ
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ABSTRACT. DARPA Intelligent Collaboration and Visualization Program [DARPA1997] developed a general framework for the collaborative systems, namely, for the audit of these systems. The authors applied the framework for different kind of problems and for collaborative project management [Nițchi2006]. In different particular type of collaborative systems were developed other frameworks. By these, but also from our experience we developed a new general framework for collaborative systems that is organized on 4 tiers and 8 levels. This note would be a short presentation of the structure of this framework and how it can be used in development of the CSCW for the collaborative systems in project management and also in education.

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The DACCIC-1 Computer and the Determination of the Earth Artificial Satellites Trajectories in Cluj-Napoca

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An important field of research for astronomers of observatories from Bucharest, Cluj-Napoca and Timișoara (which today form the Astronomical Institute of Romanian Academy) is dedicated to space researches. It began 50 years ago, since the launch of the first Earth's artificial satellite (Sputnik 1) on October 4, 1957. The Russian word "Sputnik" means "companion". Sputnik 1 (the first artificial companion of the Earth) was 58 cm in diameter and weighed approximately 83.6 kg. Each of its elliptical orbits around the Earth took about 96 minutes [8].

In the same year (1957) in Cluj-Napoca was founded *Institute of Numerical Analysis* under the leadership of Professor Tiberiu Popoviciu [6]. Here, in the framework of "Computing Machines" department, between 1959-1963, was realized the electronic computer DACICC-1 (the name

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Relationships Between Survival Times

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ABSTRACT. It is analyzed the impact by which the presence or absence of a prognostic factor modifies the occurrence of death or the recurrence of illness. We transform as in a previous paper the observations of a group of data by a set of functions till we find the log rank test minimal value. The problem is first solved for αT and $\alpha + T$ where T is survival time as basis. In the second step the result is generalized for $\alpha g(T)$ and $\alpha + g(T)$ with g a positive increasing function. The author has a series of Mathematica programs by which data about cancer cases from Oncology Institute "Ion Chiricuta" are investigated.

KEY WORDS: survival analysis, logrank test, delay of death, breast cancer, Mathematica program

MSC 2000: 62N02, 62N03

1 Introduction

We generalized the results of a previous paper [6] First we remember that we have a set I of patients with

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