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PETRU SOLTAN, Mathematician

LIANA LUPȘA

The Romanian academician Petru Soltan was born on June 29, 1931 (in official ID papers in 1930), at Coșnița, Dubăsari district (Transnistria), the Republic of Moldavia.

He attends the courses of the secondary school in the native village, and the 8th grade at the Boys Boarding School no. 4 in Chișinău. He continues his studies at the Russian-medium school no.2 in Tiraspol, at the Teachers Institute in Tiraspol (1948–1950) and at the Pedagogic Institute in Chișinău (1950–1952). After winning the first place at the Republican Contest among students, and a mention at the regional contest with the paperwork *The Generalization of Pythagorean Theorem for multi-dimensional figures*, he is selected as a PhD student at the “M.V. Lomonosov University” in Moscow (1954–1958) and obtained the first title of habilitated Doctor in physical-mechanical science in 1961.

According to his own statements, this is the period when he studies books about the Romanian history at the Central Library in URSS, becoming a leader of the Romanian spirit among the Moldavians in Moscow.

He begins his activity as a professor and director at the Medium School no. 1 in Hâncești (1952–1953). He works as Assistant at the Pedagogic Institute in Chișinău. In 1958, he is employed as Assistant at the State University in Chișinău, and between 1963 and 1972 he is Associate Professor at the same university. In the period 1966–1973 he is the Head of Applied Mathematics Department at the State University in Chișinău. In this period he works as a superior scientific collaborator at the Institute of Mathematics of the Moldavian Science Academy (1965–1970).

The second PhD degree sustained at the Science Academy of URSS in 1970–1971 makes him a habilitated Doctor in physical-mechanical science. In January 1973 he obtains the title of University Professor Doctor, approved

Series A

Functional Equations

Approximation and Convexity

Hybrid Over-Relaxed Proximal Point Procedure and Applications

RAVI P. AGARWAL RAM U. VERMA
(KINGSVILLE) (KINGSVILLE)

ABSTRACT. A general framework for an over-relaxed algorithmic procedure based on A -maximal relaxed monotonicity (AMRM) is developed, and then the convergence analysis to the context of solving a general class of nonlinear inclusion problems is examined. This framework is also quite suitable for generalizing the Yosida approximation/regularization to the context of solving nonlinear first-order evolution equations that are based on nonlinear maximal accretive/nonlinear monotone mappings and corresponding nonlinear nonexpansive semigroups on Hilbert spaces as well as Banach spaces.

KEY WORDS: Variational inclusions, Maximal monotone mapping, A -maximal monotone mapping, Generalized resolvent operator.

MSC 2000: 49J40, 65B05

◇Ravi P. Agarwal, Department of Mathematics
Texas A&M University - Kingsville
700 University Blvd.
Kingsville, TX 78363-8202, USA,
email: Agarwal@tamuk.edu

◇Ram U. Verma, Department of Mathematics
Texas A&M University - Kingsville
Kingsville, Texas 78363, USA,
email: verma99@msn.com

A Kind of Traveling Salesman Problems

DELIA GOINA
(CLUJ-NAPOCA)

ABSTRACT. In the present paper a kind of Traveling Salesman Problem, based on the mathematical model attached by us to a concrete portfolio optimization problem, is analyzed.

KEY WORDS: traveling salesman problem

MSC 2000: 90C10, 90C27, 90C35.

1 Introduction

The Traveling Salesman Problem, denoted by TSP, is one of the oldest and most intensively discussed combinatorial problem. This is mainly due to its numerous practical applications. Certain aspects of such applications have led to several different variants (new types) of TSP obtained by inducing modifications to the objective function or to the restrictions. With respect to these we mention:

- precedence-constrained TSP ([4]),

[◇]Delia Goina, Babeş-Bolyai University,
Faculty of Mathematics and Computer Science,
email: delia3001@yahoo.com

Generalized Interior Characterizations for Saddle Points

ANCA GRAD
(CLUJ-NAPOCA)

ABSTRACT. We present necessary and sufficient conditions for the existence of saddle points of the Lagrange function associated with a scalar convex optimization problem with geometric, cone and affine constraints. Despite the fact that saddle points have been being investigated since the early beginnings of the optimization theory, there is still room for improvements. Our characterization is new and its advantage relies on the use of generalized interiors, which are a far better choice in contrast to the classical topological or algebraic interior.

1 Preliminary Notions and Results

Convex cones play an important role in optimization, due to the fact that with their help a partial order may be defined on vector spaces. Let X be a vector space, and let $C \subseteq X$ be a nonempty convex cone. By means of the cone C we can introduce on X a relation \leq_C as follows:

for $x, y \in X$ we write $x \leq_C y$ if $y - x \in C$.

[◇]Anca Grad, Faculty of Mathematics and Computer Science,
Babeş-Bolyai University, Cluj-Napoca,
email: dimitruanca@math.ubbcluj.ro

Fixed Point Theorems in Vector Metric Spaces for Single-Valued Operators

IOAN-RADU PETRE
(CLUJ-NAPOCA)

ABSTRACT. In this work we extend some classical metric fixed point theorems for generalized contractions to the case of vector metric spaces (see C. Çevik, I. Altun [3]). Another purpose of the paper is to discuss a theory for the Banach contraction fixed point theorem in vector metric spaces in the sense given by I.A. Rus (see [7]) for the case of classical metric spaces. Similarly, the theory can be extended to other generalized contractions in vector metric spaces. Some consequences to abstract Gronwall lemmas and comparison theorems are also given.

KEY WORDS: Riesz space, vector metric space, fixed point, generalized contraction, limit shadowing property, Gronwall lemma, comparison principle.

MSC 2000: 47H10, 54H25.

1 Preliminaries and Introduction

We present first some auxiliary concepts and results.

◇Ioan-Radu Petre, Department of Mathematics, Babeş-Bolyai University, Cluj-Napoca, email: ioan.petre@ubbcluj.ro

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A Class of Sequences that Converge to an Euler Type Constant

ALINA SÎNTĂMĂRIAN
(CLUJ-NAPOCA)

ABSTRACT. In this paper we introduce an Euler type constant, $\mathcal{I}(a; s)$, as being the limit of the sequence

$$\left(\frac{1}{a^s} + \frac{1}{(a+1)^s} + \cdots + \frac{1}{(a+n-1)^s} - \frac{1}{1-s} ((a+n-1)^{1-s} - a^{1-s}) \right)_{n \in \mathbb{N}},$$

where $a \in (0, +\infty)$ and $s \in (0, 1)$, and we investigate the rate of convergence of a class of sequences that converge quickly to it.

KEY WORDS: sequence, convergence, an Euler constant, Ioachimescu's constant.

MSC 2000: 11Y60, 40A05.

[◇]Alina Sîntămărian, Department of Mathematics
Technical University of Cluj-Napoca
Str. Memorandumului nr. 28
400114 Cluj-Napoca, Romania,
email: Alina.Sintamarian@math.utcluj.ro

**The Darboux Problem for Third Order
Hyperbolic Inclusions via Contraction Principle of
Covitz and Nadler**

GEORGETA TEODORU
(IASI)

ABSTRACT. In this paper we present, via contraction principle of Covitz and Nadler, an existence result for the Darboux Problem corresponding to a third order hyperbolic inclusion of the form $u_{xyz} \in F(x, y, z, u)$.

KEY WORDS: multifunction, selection, contraction principle for multifunctions, hyperbolic inclusion, Darboux Problem.

MSC 2000: 35L30, 35R70, 47H10.

◇Georgeta Teodoru, Department of Mathematics,
Technical University "Gh. Asachi" Iasi, 11 Carol I Blvd., RO-700506, Iasi 6, Romania,
email: teodoru@gauss.math.tuiasi.ro

◇ *Paper presented at the International Conference on Nonlinear Operators,
Differential Equations and Applications ICNODEA-2011.*

Series B

Mathematical Interdisciplinary Research

Existence Theorems for a Singular Elliptic Problem

DRAGOȘ-PĂTRU COVEI
(TÂRGU JIU)

ABSTRACT. The aim of this article is to obtain some existence results for the positive solution of a singular elliptic problem. Our proof technique is based on the method of sub-super solutions combined with a procedure which truncates the singularity of the nonlinearity.

KEY WORDS: Quasilinear problem.

MSC 2000: 35J60, 35J62, 35J66, 35J92, 58J10, 58J20.

1 Introduction

Many nonlinear problems in physics and mechanics are formulated in equations of the following form

$$(1.1) \quad -\Delta_p u + a(x)|\nabla u|^q = \lambda g(x, u) \quad \text{in } D'(\Omega), \quad u > 0 \quad \text{in } \Omega, \quad \lim_{x \rightarrow \partial\Omega} u(x) = 0,$$

[◇]Dragoș-Pătru Covei, Constantin Brancusi University of Tg Jiu,
Str. Griviței, No.1, Târgu Jiu, Gorj, Romania,
email: coveid@yahoo.com

[◇] Paper presented at the *International Conference on Nonlinear Operators, Differential Equations and Applications ICNODEA-2011*.

A Review on Local Asymptotic Stability Analysis for Mathematical Models of Hematopoiesis with Delay and Delay-Dependent Coefficients

FABIEN CRAUSTE
(LYON)

ABSTRACT. Stability analysis of mathematical models of hematopoiesis (blood cell production process), described by differential equations with delay, needs to locate eigenvalues of characteristic equations that are usually exponential polynomial functions with delay-dependent coefficients. It is then more complicated than for ordinary differential equations to determine conditions for all roots to have negative real parts. We present, on three models of increasing complexity, the tools and method that can be used, with their advantages and their limitations. The method consists in the reduction of the problem to the localization of roots of a real function, these roots giving critical values of the delay for which stability possibly switches.

KEY WORDS: Delay differential equations, delay-dependent coefficients, asymptotic stability, characteristic equation, exponential polynomial

MSC 2000: 34D20, 34K60, 92C37

[◇]Fabien Crauste, Université de Lyon, Université Lyon 1, CNRS UMR 5208, Institut Camille Jordan, 43 blvd du 11 novembre 1918, F-69622 Villeurbanne-Cedex, France, email: crauste@math.univ-lyon1.fr

Perron Problem for the Nonuniform Exponential Instability of Evolution Processes

CRISTINA PRAȚA
(TIMIȘOARA)

ABSTRACT. In this paper we consider the relation between the notions of exponential instability and admissibility, in the general context of nonuniform exponential behavior.

We generalize the work done by L. Barreira and C. Valls in [9] and [10] for the discrete case of the nonuniform exponential instability using the admissibility of the pair $(l^p(X), l^q(X))$, with $(p, q) \neq (1, \infty)$. In fact, using our methods, we show that with respect to certain adapted norms related to the nonuniform behavior, if any pair $(l^p(X), l^q(X))$, with $(p, q) \neq (1, \infty)$ is admissible for a given (nonuniform) evolution process, then this process is nonuniform exponentially expansive (i.e. the process is nonuniform exponentially instable and invertible).

In addition, for each nonuniform exponential instability we provide a collection of admissible Banach spaces, also defined in terms of the adapted norms.

◇Cristina Prața, West University of Timișoara, Romania,
email: prata.elena@info.uvt.ro

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Fractional Optimization for a Portfolio Selection Problem

OANA RUXANDRA TUNS (BODE)
(CLUJ-NAPOCA)

ABSTRACT. In the present paper we treat the portfolio selection problem as a bicriteria optimization problem. This allows us to obtain a new perspective concerning the investor's objective. In this way, we obtain a new mathematical model for the portfolio selection problem, in which the new objective function is equal to risk/return ratio, while adding some specified restrictions.

KEY WORDS: portfolio selection problem, fractional pseudo boolean optimization problem

MSC 2000: 90C09, 90C29, 90C32, 46N10

1 Introduction

Modern portfolio theory represents the scientific approach to investment. It deals with the selection of portfolios for investors who wish to maximize the expected return for the level of risk each investor is willing to assume. The portfolio theory is rooted to Harry Markowitz's work [8] and [9]. He

[◇]Oana Ruxandra Tuns (Bode), Babes Bolyai University, Faculty of Mathematics and Computer Science, Kogălniceanu Str., No 1, 400084, Cluj-Napoca, România, email: oanabode@yahoo.com

On a Special Nonlocal Version of the Allen-Cahn Model

ADRIAN VIOREL
(CLUJ-NAPOCA)

ABSTRACT. We study a nonlocal version of the Allen-Cahn equation, where the nonlocal term is a Yosida approximation of the Laplacian. This new model has the advantage of numerical simplicity but still retains the qualitative properties of the classical Allen-Cahn model. For the new model we prove global well-posedness of solutions, then we show the a priori boundedness of solutions and study the $t \rightarrow \infty$ asymptotics.

1 Introduction

Our purpose is to study the effect of replacing an unbounded regularizing term in a nonlinear evolution equation by a special nonlocal bounded approximation of it.

◇ Adrian Viorel, Department of Mathematics
Babeş-Bolyai University
400084 Cluj-Napoca, Romania,
email: adrian.viorel@math.ubbcluj.ro

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