SURFACE TO EXACT SOLUTION OF NONLINEAR SCHRODINGER EQUATION

ZH.KH. ZHUNUSSOVA, L.KH. ZHUNUSSOVA, AND K.A. DOSMAGULOVA

ABSTRACT

Heisenberg ferromagnetic equation is considered in (1+1)-, (2+1)-dimensions. Surface with appropriate coefficients of the first fundamental form is found for regular onesolitonic solution of the nonlinear Schrodinger equation with gravity which is Lakshmanan equivalence to Heisenberg ferromagnetic equation.

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2000 Mathematics Subject Classification. Primary 35J10, 35Q51; Secondary 34A34, 37K40.
Key words and phrases. nonlinear equation, immersion, surface, solitonic solution.
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NEW APPROACHES ON SYMMETRIC GENERALIZED INTUITIONISTIC FUZZY METRIC SPACES

M. JEYARAMAN AND M. SUGANTHI

Abstract. In this paper, we prove the existence and uniqueness of a common fixed point in symmetric generalized intuitionistic fuzzy metric spaces using property (E.A.) or CLRg property. We introduce the new notion for a pair of mappings \((f, g)\) on a generalized intuitionistic fuzzy metric space called weakly commuting of type \((J_f)\) and R-weakly commuting of type \((J_f)\).

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2000 Mathematics Subject Classification. 54H25, 47H10.

Key words and phrases. Weakly commuting of type \((J_f)\), R-weakly commuting of type \((J_f)\), Generalized metric space, Intuitionistic fuzzy metric space.

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NOETHERITY OF A SINGULAR INTEGRAL OPERATOR WITH
CAUCHY KERNEL AND WITH CARLEMAN’S SHIFT IN
FRACTIONAL SPACES

N.K. Bлиев AND ZH.KH. ZHUNUSSOVA

ABSTRACT

Singular integrals and equations containing singular integrals are closely related
to boundary value problems for piecewise analytic functions of a complex variable
and have important applications, for example, in the theory of boundary value
problems for partial differential equations.

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2000 Mathematics Subject Classification. Primary 45E05, 30E25; Secondary 32A38, 32A26.
Key words and phrases. singular integrals, analytic functions, Besov’s space, integral equation,
Carleman’s shift.
MATHEMATICAL MODEL OF THE EFFECTIVENESS OF ADAPTIVE AUTOMATED CONTROL SYSTEMS IN EDUCATIONAL ORGANIZATIONS

ZH.KH. ZHUNUSSOVA, S.SH. IXANOV, AND K.A. DOSMAGULOVA

ABSTRACT

Creation of adaptive automated control systems in educational organizations is an actual problem. In the process of training students and students, the need for remote control devices increases in accordance with the objectives of training and evaluation criteria. In connection with this, automated control systems are introduced, and this research provides a mathematical model of the adaptive device and meets the requirements for use in production. As for institutions of higher education, in many buildings, turnstiles, light sensors, movements, local automation systems are installed at all access and exit facilities, allowing for the inclusion and switching-off of external and stand-by lighting, taking into account the time of the year. These data in educational buildings create information flows that need to be matched with a mathematical model of material and energy balance using an adaptive control system. The final result of the calculations is the minimization of the objective function of the cost of maintaining the educational building in a robust state, taking into account external evaluations on the quality of training (the results of examinations). It’s about fixing students and teachers who enter the class in accordance with the schedule. Its effectiveness also reduces the filling of attendance documents. We conduct calculations for the study and implementation of an automated control system and describe it in mathematical formulas. The coefficients of consumption and efficiency of the system are graphically presented.

References


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Key words and phrases. automated control system, building, local automation system, mathematical model, remote control, energy balance.

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FINITE-TIME BLOW-UP FOR DAMPED STOCHASTIC WAVE EQUATION

H. Taskesen

ABSTRACT

In this work, we consider a stochastic wave equation, arising in nonlinear optics, plasma physics and several problems of mathematical physics, with weak damping term. We investigate local existence of solutions by a truncation method. We also provide a finite-time blow-up of solution result for the stochastic wave equation.

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2000 Mathematics Subject Classification. Primary 60H15, 35B44; Secondary 35Q40.
Key words and phrases. Stochastic wave equation, Local existence, Blow-up.
ON SUBPROJECTIVITY DOMAINS OF SEMIARTINIAN MODULES

YILMAZ DURĞUN AND AYSÈ ÇOBANKAYA

ABSTRACT

In this presentation we talk about on subprojectivity domain of semiartinian modules. In [5], Holston et al are interested in the projective analog of the notion of subinjectivity. A module $M$ is said to be $N$-subprojective if for every epimorphism $g : B \to N$ and homomorphism $f : M \to N$, then exists a homomorphism $h : M \to B$ such that $gh = f$. Clearly, every module is subprojective relative to any projective module. For a module $M$, the subprojectivity domain of $M$, $Pr^{-1}_1(M)$ is defined to be the collection of all modules $N$ such that $M$ is $N$-subprojective, that is $Pr^{-1}_1(M) = \{ N \in Mod - R \mid M$ is $N$-subprojective $\}$. It is well known that a module is projective if and only if $Pr^{-1}_1(M) = \{ N \in Mod - R \mid N$ is projective $\}$. The projective analog of indigent modules was considered in [5], namely p-indigent modules. A module $M$ is p-indigent if $Pr^{-1}_1(M) = \{ N \in Mod - R \mid N$ is projective $\}$. In [2], Durgun consider rings over which every (simple)module is p-indigent or projective, and refer such rings as having no (simple) subprojective middle class.

We consider in this study, for every semiartinian module $M$, the subprojectivity domain of $M$. The smallest possible subprojectivity domain of a semiartinian module is the class of edc-flat. Projective modules and modules with zero socle are example of edc-flat modules in [3]. Semiartinian modules whose subprojectivity domain is as smallest as possible will be called semiartinian indigent(s-indigent). Properties of subprojectivity domains of semiartinian modules and of s-indigent modules are studied.

REFERENCES


2010 Mathematics Subject Classification. 16D40, 16D60, 16E30.

Key words and phrases. Semiartinian modules; subprojectivity domain; s-indigent modules.


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INVERSE SUM INDEG INDEX OF WHEEL RELATED GRAPHS

Ö. ÇOLAKOĞLU HAVARE

ABSTRACT

Topological indices are a real number of a molecular structure obtained via molecular graph $G$ whose vertices and edges represent the atoms and the bonds, respectively. In this paper, it is studied the inverse sum indeg topological index. It is presented expressions for the inverse sum indeg index of gear graph, helm graph, friendship graph, and flower graph.

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ON THE COMPONENTS OF SOME SPECIAL SEQUENCES

ORHAN DIŞKAYA AND HAMZA MENKEN

ABSTRACT

The Fibonacci, Lucas, Pell, Pell-Lucas, Jacobsthal and Jacobsthal-Lucas sequences \( \{F_n\}, \{L_n\}, \{P_n\}, \{PL_n\}, \{J_n\} \) and \( \{JL_n\} \) are defined by two order recurrences for \( n \geq 0 \), respectively,

\[
\begin{align*}
F_{n+2} &= F_{n+1} + F_n, \\
L_{n+2} &= L_{n+1} + L_n, \\
P_{n+2} &= 2P_{n+1} + P_n, \\
PL_{n+2} &= 2PL_{n+1} + PL_n, \\
J_{n+2} &= J_{n+1} + 2J_n, \\
JL_{n+2} &= JL_{n+1} + 2JL_n,
\end{align*}
\]

with the initial conditions, respectively,

\[
\begin{align*}
F_0 &= 0, \quad & F_1 &= 1, \\
L_0 &= 2, \quad & L_1 &= 1, \\
P_0 &= 0, \quad & P_1 &= 1, \\
PL_0 &= 2, \quad & PL_1 &= 1, \\
J_0 &= 0, \quad & J_1 &= 1, \\
JL_0 &= 2, \quad & JL_1 &= 1.
\end{align*}
\]

In this work we define new component sequences which generalize the Fibonacci, Lucas, Pell, Pell-Lucas, Jacobsthal and Jacobsthal-Lucas sequences with different initial conditions. We give some identities of these component sequences. Also, the Binet-like formulas, the generating functions and the exponential generating functions are obtained.

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Key words and phrases. The Fibonacci sequence, Lucas and Pell-Lucas sequences, Jacobsthal and Jacobsthal-Lucas sequences, the Binet-like formula, the generating function and the exponential generating function.

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ON THE COMPONENTS OF SOME SPECIAL SEQUENCES

ORHAN DIŞKAYA AND HAMZA MENKEN

ABSTRACT

The Fibonacci, Lucas, Pell, Pell-Lucas, Jacobsthal and Jacobsthal-Lucas sequences \( \{F_n\}, \{L_n\}, \{P_n\}, \{P_Ln\}, \{J_n\} \) and \( \{J_Ln\} \) are defined by two order recurrences for \( n \geq 0 \), respectively,

\[
F_{n+2} = F_{n+1} + F_n, \\
L_{n+2} = L_{n+1} + L_n, \\
P_{n+2} = 2P_{n+1} + P_n, \\
P_{PLn+2} = 2P_{PLn+1} + P_{PLn}, \\
J_{n+2} = J_{n+1} + 2J_n, \\
J_{JLn+2} = J_{JLn+1} + 2J_{JLn},
\]

with the initial conditions, respectively,

\[
F_0 = 0, \quad F_1 = 1, \\
L_0 = 2, \quad L_1 = 1, \\
P_0 = 0, \quad P_1 = 1, \\
P_{PL0} = 2, \quad P_{PL1} = 1, \\
J_0 = 0, \quad J_1 = 1, \\
J_{JL0} = 2, \quad J_{JL1} = 1.
\]

In this work we define new component sequences which generalize the Fibonacci, Lucas, Pell, Pell-Lucas, Jacobsthal and Jacobsthal-Lucas sequences with different initial conditions. We give some identities of these component sequences. Also, the Binet-like formulas, the generating functions and the exponential generating functions are obtained.

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ON THE COMPONENTS OF SOME SPECIAL SEQUENCES

ORHAN DIŞKAYA AND HAMZA MENKEN

ABSTRACT

The Fibonacci, Lucas, Pell, Pell-Lucas, Jacobsthal and Jacobsthal-Lucas sequences \( \{F_n\}, \{L_n\}, \{P_n\}, \{PL_n\}, \{J_n\} \) and \( \{JL_n\} \) are defined by two order recurrences for \( n \geq 0 \), respectively,

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\begin{align*}
F_{n+2} &= F_{n+1} + F_n, \\
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P_{n+2} &= 2P_{n+1} + P_n, \\
PL_{n+2} &= 2PL_{n+1} + PL_n, \\
J_{n+2} &= J_{n+1} + 2J_n, \\
JL_{n+2} &= JL_{n+1} + 2JL_n,
\end{align*}
\]

with the initial conditions, respectively,

\[
\begin{align*}
F_0 &= 0, \quad \text{and} \quad F_1 = 1, \\
L_0 &= 2, \quad \text{and} \quad L_1 = 1, \\
P_0 &= 0, \quad \text{and} \quad P_1 = 1, \\
PL_0 &= 2, \quad \text{and} \quad PL_1 = 1, \\
J_0 &= 0, \quad \text{and} \quad J_1 = 1, \\
JL_0 &= 2, \quad \text{and} \quad JL_1 = 1.
\end{align*}
\]

In this work we define new component sequences which generalize the Fibonacci, Lucas, Pell, Pell-Lucas, Jacobsthal and Jacobsthal-Lucas sequences with different initial conditions. We give some identities of these component sequences. Also, the Binet-like formulas, the generating functions and the exponential generating functions are obtained.

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Key words and phrases. The Fibonacci sequence, Lucas and Pell-Lucas sequences, Jacobsthal and Jacobsthal-Lucas sequences, the Binet-like formula, the generating function and the exponential generating function.

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ON THE SEQUENCE OF GELL NUMBERS

ORHAN DIŞKAYA AND HAMZA MENKEN

ABSTRACT

The Pell sequence \( \{P_n\}_{n\geq0} \) is defined by the initial values \( P_0 = 0 \) and \( P_1 = 1 \) and the recurrence relation

\[
P_{n+2} = 2P_{n+1} + P_n, \quad n \geq 0.
\]

In this work we introduce a new class of Gell numbers which generalizes Pell numbers. We derive Binet-like formula, generating function and some identities of Gell numbers.

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2000 Mathematics Subject Classification. Primary 11B39, 05A15; Secondary 11R52.
Key words and phrases. The Pell sequence, the Binet-like formula, Catalan and Cassini Identities, the generating function.
INTERPRETATION OF PHYSICAL CONDITIONS OF SCHOOLS WITH FUZZY MULTI CRITERIA DECISION MAKING

FERIDE TUĞRUL, MEHMET ÇITIL, AND BEYZA KARASOLAK

ABSTRACT

The education system has 4 basic elements. These; education system, educator, student (education student) and physical facility. In this study, the physical condition is researched. The aim of this study is to evaluate and interpret the suitability of the physical structures of schools in terms of education and training according to teachers by the multi-criteria decision making method in fuzzy logic. One of the factors affecting success is the physical structure. This study has been conducted with the help of teachers’ ideas to determine whether physical structure has an impact on student achievement. This study is an application of a multi-criteria decision-making method, as there are many factors affecting physical structure. In this study ‘individual interview’ technique has been applied to interpret physical conditions of schools. Scores obtained as a result of individual interviews have been interpreted using multi-criteria decision making method. Teachers’ ideas affecting success have been taken into consideration. The results have been compared with the official data.

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Key words and phrases. Fuzzy sets, Decision making, Multi criteria.

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SOLUTIONS OF THE FUZZY PROBLEM BY FUZZY LAPLACE TRANSFORM

HÜLYA GÜLTEKİN ÇİTİL

ABSTRACT
In this paper is studied solutions of the fuzzy problem by fuzzy Laplace transform. Generalized differentiability concept is used. Examples are solved on studied problem.

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2000 Mathematics Subject Classification. Primary 03E72; Secondary 44A10.
Key words and phrases. Fuzzy Problem, Fuzzy Laplace Transform, Generalized Differentiability.
COMPARISON OF BOOTSTRAP CONFIDENCE INTERVALS
BASED ON ROBUST ESTIMATORS FOR POPULATION MEAN

HE. AKYUZ AND B. ARSAN

ABSTRACT

In order to obtain parameter estimations in statistics, assumptions such as normality, independence and homogeneity variance should be provided. However, it is recommended to use robust estimators where there are no assumptions or where there are extreme values in the data set (Tiku and Akkaya, 2004). In this study, the confidence intervals of the population mean were obtained from the median, trimmed mean and winsorized mean based bootstrap confidence intervals. These confidence intervals are compared in terms of coverage probability and average width under different scenarios. For this purpose, a simulation study was performed with statistical codes written in MATLAB program. Normal and some skewed distributions were used to obtain confidence intervals, sample sizes $n = 10$, 20, 30 and 50, I. type error level $= 0.05$ and bootstrap replication $B=1000$. According to the results of the simulation study; it was obtained that the confidence intervals based on these estimators were very close to the nominal confidence level in all distributions. In addition, it was seen that as the sample size increased, the coverage probability increased. When the average widths for similar coverage probabilities were examined, it was determined that the widths of confidence intervals based on the trimmed mean were narrower than the others. As a result, it is said that bootstrap confidence intervals based on the trimmed mean give more reliable results than the median and winsorized mean confidence intervals for population mean.

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2000 Mathematics Subject Classification. 62F10, 62F35, 62F40.

Key words and phrases. Average width, Coverage probability, Median, Trimmed mean, Winsorized mean.
A STUDY ON EFFICIENCY OF MATRICES REPRESENTING SOFT SETS IN DECISION MAKING

HUSEYIN KAMACI AND SUBRAMANIAN PETCHIMUTHU

ABSTRACT

In this paper, we focus on matrices representing soft sets and their applications in decision making. Accordingly, we propose a novel decision making algorithm called soft distributive sum-max decision making, which uses soft matrices. Moreover, we present examples and comparison results to demonstrate the performance of this algorithm.

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2000 Mathematics Subject Classification. Primary 03E75; Secondary 03E72, 94D05.
Key words and phrases. Soft set, Soft matrix, Decision making.
A GENERALIZATION OF PARABOLIC RIESZ AND
PARABOLIC BESSEL POTENTIALS

C. SEKIN AND I. A. ALIEV

ABSTRACT

Parabolic Riesz and Bessel type potentials $H^\alpha f$ and $H^\alpha f$ are defined in the Fourier terms by

$$F[H^\alpha f](\xi, \tau) = (|\xi|^2 + i\tau)^{-\alpha/2} F[f](\xi, \tau), \quad (\xi \in \mathbb{R}^n, \tau > 0)$$

and are interpreted as a fractional powers of differential operators $(-\Delta + \frac{\partial}{\partial t})$ and $(I - \Delta + \frac{\partial}{\partial t})$, where $\Delta = \sum_{k=1}^{n} \frac{\partial^2}{\partial x_k^2}$ is the Laplacian (see, e.g. [1-4]).

These potentials have the following integral representations:

1. $$H^\alpha f(x,t) = \frac{1}{\Gamma(\frac{\alpha}{2})} \int_{\mathbb{R}^n \times (0,\infty)} \tau^{\frac{\alpha}{2} - 1} W(y,\tau) f(x-y, t-\tau) dyd\tau,$$

2. $$H^\alpha f(x,t) = \frac{1}{\Gamma(\frac{\alpha}{2})} \int_{\mathbb{R}^n \times (0,\infty)} \tau^{\frac{\alpha}{2} - 1} e^{-\theta \tau} W(y,\tau) f(x-y, t-\tau) dyd\tau.$$

Here, $W(y,\tau) = (4\pi\tau)^{-n/2} \exp(-|y|^2 / 4\tau), \quad (y \in \mathbb{R}^n, \tau > 0)$, is the Gauss-Weierstrass kernel.

In this work we define a family of integral operators

$$A^\alpha_{\beta,\theta} f(x,t) = \frac{1}{\Gamma(\alpha)} \int_{\mathbb{R}^n \times (0,\infty)} \tau^{\alpha-1} e^{-\theta \tau} W^{(\beta)}(y,\tau) f(x-y, t-\tau) dyd\tau$$

which generalize both of operators $H^\alpha f$ and $H^\alpha f$. We investigate behavior of this family in the framework of $L_p$-spaces.

2000 Mathematics Subject Classification: 42B99; 47G10.

Key words and phrases. Gauss-Weierstrass semigroup, Parabolic Riesz potentials, Parabolic Bessel potentials.
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ON THE RIESZ BASISNESS OF THE DISCONTINUOUS BOUNDARY PROBLEM WITH ANTIPERIODIC BOUNDARY CONDITIONS

OLGUN CABR AND KHANLAR R. MAMEDOV

ABSTRACT

In this paper we consider the discontinuous differential operator generated by the differential expression

\[ l(y) = \begin{cases} 
  l_1(y_1) = y''_1 + q_1(x)y_1, & x \in (-1, 0) \\
  l_2(y_1) = y'_2 + q_2(x)y_2, & x \in (0, 1)
\end{cases} \]

where \( q_1(x) \in C^2[-1, 0] \) and \( q_1(x) \in C^2(0, 1] \) are complex-valued functions.

We are interested in the problem of the operator (1) with the antiperiodic boundary condition

\[ U_1(y) := U_1(-1) + U_1(1) = 0, \]

and with compatibility conditions

\[ V_3(y) := V_3(0) + V_3(1) = 0, \]

Asymptotic formulas of eigenvalues and eigenfunctions of the operator are obtained. Using these asymptotic formulas for eigenvalues and eigenfunctions we prove the basisness of the root functions of the boundary value problem.

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ON THE RIESZ BASISNESS OF THE DISCONTINUOUS BOUNDARY PROBLEM WITH PERIODIC BOUNDARY CONDITIONS

OLGUN CABR AND KHANLAR R. MAMEDOV

ABSTRACT

In this paper we consider the discontinuous differential operator generated by the differential expression

\[
\begin{align*}
  l(y) &= \begin{cases} 
    l_1(y_1) = y_1'' + q_1(x)y_1, & x \in (-1,0) \\
    l_2(y_1) = y_2'' + q_2(x)y_2, & x \in (0,1)
  \end{cases}
\end{align*}
\]

where \( q_1(x) \in C^2[-1,0) \) and \( q_1(x) \in C^2(0,1] \) are complex-valued functions.

We are interested in the problem of the operator (1) with the periodic boundary condition

\[
\begin{align*}
  U_1(y) := U_{1,-1}(y_1) + U_{1,1}(y_2) &= y_1(-1) - y_2(1) = 0, \\
  U_2(y) := U_{2,-1}(y_1) + U_{2,1}(y_2) &= y_1'(1) - y_2'(1) = 0,
\end{align*}
\]

and with compatibility conditions

\[
\begin{align*}
  V_3(y) := V_{3,0-}(y_1) + V_{3,0+}(y_2) &= y_1(-0) - y_2(+0) = 0, \\
  V_4(y) := V_{4,0-}(y_1) + V_{4,0+}(y_2) &= y_1'(0) - y_2'(0) = 0.
\end{align*}
\]

Asymptotic formulas of eigenvalues and eigenfunctions of the operator are obtained. Using these asymptotic formulas for eigenvalues and eigenfunctions we prove the basisness of the root functions of the boundary value problem.

REFERENCES


2000 Mathematics Subject Classification. Primary 34B24, 34L10.

Key words and phrases. Riesz Basis, Sturm Liouville Operator, Periodic Boundary Conditions.
EXACT SOLUTIONS OF SCHÖDINGER PARTICLE 
PERTURBED BY A MAGNETIC FIELD

H. F. KISOGLU

ABSTRACT

In this paper, motion of a Schrödinger particle in a space-dependent external magnetic field is tackled. The external field assumed is the one in quadrupole magnets in linear particle accelerators [1]. The approximate analytical solutions of this non-exact solvable problem is obtained via perturbation method of Asymptotic Iteration Method (AIM) [2, 3] that is widely used in the last decade. Furthermore, ladder operators that move the system to either upper or lower energy levels are achieved.

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2000 Mathematics Subject Classification. Primary 81V35, 65Z05; Secondary 70G60, 34B60.
Key words and phrases. Schrödinger equation, Asymptotic Iteration Method, external fields, perturbation method.
ANALYTICAL SOLUTIONS OF A SCALAR PARTICLE IN AN ARBITRARY EXTERNAL MAGNETIC FIELD

H. F. KISOGLU AND K. SOGUT

ABSTRACT

In the study, analytical solutions and eigenvalues of a non-relativistic scalar particle in an external magnetic field which is exponentially changing with the space are obtained dealing with Schrödinger equation. For this purpose, Asymptotic Iteration Method (AIM) [1, 2], commonly used over the past decade, is used to tackle the problem. Besides, ladder operators of the system are achieved.

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2000 Mathematics Subject Classification. Primary 81V35, 65Z05; Secondary 70G60, 34B60.
Key words and phrases. Schrödinger equation, Asymptotic Iteration Method, external fields, perturbation method.
A HIGH ACCURACY NUMERICAL SOLUTION OF THE EQUAL WIDTH WAVE EQUATION

M. ZORSAHIN GORGULU AND D. IRK

ABSTRACT

The equal width wave (EW) equation

\[ u_t + \epsilon uu_x - \mu u_{xxt} = 0 \]

is a nonlinear partial differential equation that proposed by Morrison et al. [1], which modeled the same wave phenomena with the simulated by Korteweg de Vries (KdV) equation, which models the time-dependent motion of shallow water waves. The EW equation has an analytical solution for only a restricted set of the boundary and initial conditions. Because of the non-existence of the analytical solutions of the EW equation for various boundary and initial conditions, the studies of numerical solutions for the EW equation has an importance. In this study, the EW equation is solved numerically by Galerkin finite element method, based on cubic trigonometric B-spline for the space discretization and fourth order Runge Kutta method for time discretization. The numerical example related to single solitary wave is considered as the test problem. To see the accuracy and efficiency of the proposed method, the error norm \( L_\infty \) is computed and the three conservation quantities of the motion are calculated to determine the conservation properties of the proposed algorithm. The obtained results show that proposed algorithm exhibit high accuracy and efficiency in both conservation of the invariants and error norm for the numerical solution of the EW equation.

REFERENCES


2000 Mathematics Subject Classification. Primary 65L06, 65M60; Secondary 76B25.
Key words and phrases. Runge-Kutta method, Galerkin method, EW equation.
ON THE AUTOMORPHISMS OF GRASSMANN ALGEBRAS

NAZAN AKDOGAN

ABSTRACT

In this study, we work in the infinite dimensional Grassmann algebra and provide the description of its automorphisms via their actions on the generators.

REFERENCES


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2010 Mathematics Subject Classification. 15A75; 14J50.
Key words and phrases. Grassmann algebra, automorphisms.
A NOTE ON AUTOMORPHISMS OF FREE METABELIAN LIE ALGEBRAS

NAZAR ŞAHİN ÖĞÜSLÜ

ABSTRACT

Let $F$ be the free metabelian Lie algebra of rank 2. In this study, we describe the subgroup of automorphisms of $F$ fixing the algebra $F^{S_2}$ of $S_2$-invariants.

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2000 Mathematics Subject Classification. 17B01; 17B30; 17B40.
Key words and phrases. Free metabelian Lie algebras, automorphisms.
ON GENERATED GROUPS

S. DEMIRALP AND G. HACAT

ABSTRACT

In this paper we define a binary operation $\circledast$ on $Y$, called as generated operation. We have shown the basic features of this binary operation. The aim of this study is to define and investigate the properties of generated semigroups and generated groups.

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2000 Mathematics Subject Classification. Primary xxx, yyyy; Secondary xxxx, yyyy.

Key words and phrases. Semigroups, groups, generated semigroups, generated groups.
COMMON FIXED POINT THEOREMS FOR WEAKLY COMMUTING OF TYPE (J) IN GENERALIZED INTUITIONISTIC FUZZY METRIC SPACES

M. JEYARAMAN AND D. POOVERAGAVAN

This paper is dedicated to our advisors.

ABSTRACT

In this paper focuses on the existence of fixed point in generalized intuitionistic fuzzy metric spaces. The presentation of generalized intuitionistic fuzzy metric spaces in n-tuple encourages us to define different mapping in the symmetric generalized intuitionistic fuzzy metric spaces. The introduce of notation for pair of mappings (f, g) on generalized intuitionistic fuzzy metric spaces called weakly commuting of type (J) and R-weakly commuting of type (J) is given. This proved common fixed point theorems in generalized intuitionistic fuzzy metric spaces employing the effectiveness of property (E.A.) and CLRg property.

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2000 Mathematics Subject Classification. Primary 47H10; Secondary 54H25.

Key words and phrases. Common fixed point, V-fuzzy metric spaces, Generalized intuitionistic fuzzy metric spaces.

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SOME NEW FIXED POINT THEOREMS IN GENERALIZED
INTUITIONISTIC FUZZY METRIC SPACES

M.RAJESWARI, M.JEYARAMAN, AND S.DURGA

This paper is dedicated to our advisors.

ABSTRACT
The aim of this paper is to give some new fixed point theorems for contractive type mappings in generalized intuitionistic fuzzy metric spaces. The results presented improve some well known results in the literature.

REFERENCES

Key words and phrases. Complete, Compact, Fuzzy Metric Space, Intuitionistic Fuzzy Metric Space.

The first author was supported in part by NSF Grant #000000.
ON THE ALMOST PERIODIC SOLUTIONS OF HIGH-ORDER FUZZY CELLULAR NEURAL NETWORKS WITH TIME-VARYING DELAYS

R.YAZGAN

ABSTRACT

In this paper, almost periodic solutions are considered for a class of high-order fuzzy cellular neural networks with time-varying delays. By using properties of almost periodic functions, exponential dichotomy theory and some differential inequality techniques, some sufficient conditions are established to ensure for existence and exponential stability of solutions for the model. This results are new and complement recently ones. Finally, an example is given to show the correctness.

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Key words and phrases. Almost periodic solution, Fuzzy cellular neural networks, Dichotomy, Exponential stability.
ABSTRACT

Plenty of scalar field proposals have been defined so far in order to answer the question "Why the universe is expanding faster today than it did in its infancy?". Although fundamental theories can help us to formulate different scalar field prescriptions, they do not define their self-interacting potentials in exact forms due to the complexity of corresponding equations. In the present work, we focused on the redefinition of the tachyonic scalar field dark energy description\cite{1, 2, 3} by making use of the Hobbit model\cite{4}. In Tolkien’s "The Lord of the Rings" trilogy, the Hobbits resemble a mixture of three kinds of people mentioned in the book: the aspect of Men, the height of Dwarfs and pointed ears of Elfs\cite{4}. In the same way, the Hobbit model behaves as the three main fluids of the standard cosmology: dark matter, dark energy and dark radiation. Here, we use the Hobbit model for the reverse engineered tachyonic scalar field description.

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2000 Mathematics Subject Classification. 83F05; 83C05; 35Q75.
Key words and phrases. Cosmology, Dark Energy, Scalar Field.
PALINDROMES IN A NONASSOCIATIVE SETTING

ŞEHMUS FINDIK

ABSTRACT

We define palindromes in a Lie algebra setting. We work in the free metabelian Lie algebras, and give some algebraic properties of the set of palindromes.

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2000 Mathematics Subject Classification. 17B01; 17B30.
Key words and phrases. Free metabelian Lie algebras; palindrome.
DISCONJUGACY OF LINEAR IMPULSIVE DIFFERENTIAL EQUATIONS

S. DOĞRU AKGÖL

ABSTRACT

The classical Vallée-Poussin inequality for the linear homogeneous differential equation

\[ x'' + p(t)x' + q(t)x = 0 \]

states that if \( a \) and \( b \), with \( a < b \), are two consecutive zeros of equation (1), then

\[ \int_0^\infty \frac{dt}{t^2 + p_0t + q_0} < \frac{b - a}{2}. \]

The above inequality was given by De la Vallée-Poussin in 1929 [1]. Later, its modifications have been obtained by Hartman and Wintner [2], and Sansone called the mentioned modifications as \textit{the real Vallée-Poussin criterion}. It is natural to make a connection between the Vallée-Poussin inequality and the disconjugacy of equation (1). Namely, if the inequality does not hold, then equation (1) is disconjugate in the interval \([a, b]\).

In this talk, we will present a new criteria for the disconjugacy of linear homogeneous impulsive differential equations by means of a new Vallée-Poussin type inequality.

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\[ \text{E-mail address, S. Doğru Akgöl: sibel.dogruakgol@atilim.edu.tr} \]
ON THE SPECTRUM OF THE DIRAC OPERATOR WITH A SPECTRAL PARAMETER IN THE BOUNDARY CONDITION

A.G. Ferzullazadeh, I.M. Nabiev

ABSTRACT: The one-dimensional stationary Dirac system (related to the behavior of a relativistic electron in an electrostatic field) has the following canonical form:

\[ BY'(x) + Q(x)Y(x) = \lambda Y(x), \]

where \( \lambda \) is the spectral parameter, \( B = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix} \), \( Q(x) = \begin{pmatrix} p(x) & q(x) \\ q(x) & -p(x) \end{pmatrix} \).

\[ Y(x) = \begin{pmatrix} y_1(x) \\ y_2(x) \end{pmatrix}. \]

Suppose that the elements \( p(x) \) and \( q(x) \) matrices \( Q(x) \) in (1) are real functions belonging to the space \( W^1_2[0, \pi] \). By \( W^1_2[0, \pi] \) we denote the space consisting of absolutely continuous functions defined on a segment \([0, \pi]\), which have a derivative, summable with a square on \([0, \pi]\). Consider a boundary problem generated on a segment \([0, \pi]\) by the Dirac equation (1) and the boundary conditions of the form

\[ (\alpha \lambda + \beta)y_1(0) + y_2(0) + \omega y_1(\pi) = 0, \]
\[ -\omega y_1(0) + \gamma y_1(\pi) + y_2(\pi) = 0, \]

where \( \alpha, \beta, \gamma, \omega \) are real numbers, and \( \alpha \omega \neq 0 \).

Many questions of inverse spectral problems for the Dirac system in the case of separated and non-separated boundary conditions are well studied (see [1–4] and the literature in them). In this paper, we study the basic properties of the eigenvalues of boundary problem (1), (2).

REFERENCES

STRESS ANALYSIS OF FUNCTIONAL GRADED PRESSURE VESSELS UNDER THE EFFECT OF UNIFORM MAGNETIC FIELD

A. TEMO AND D. YARIMPABUÇ

This paper is dedicated to our advisors.

ABSTRACT

In this study, the static stress analysis of functionally graded thick cylindrical and spherical bodies subjected to an internal pressure under the effect of uniform magnetic field are discussed numerically. It is assumed that these bodies are made from a mixture of metal and ceramic and the all material properties and magnetic permeability are graded exponentially in radial direction. These conditions result in linear boundary value problems. The solution of these differential equation are handled by both the Complementary Function Method and the Pseudospectral Chebyshev Method. The former is a method that allows the boundary value problem to be solved by converting the boundary value problem into an easily solvable initial value problem system, while the latter is based on the differential matrix approach and converts the differential equation into a system of linear equations by this approach. The solutions available in the literature are used to confirm the results obtained in this study. The effects of two different mixture materials and uniform magnetic field on stress and displacement distributions are shown in graphical form.

REFERENCES


2000 Mathematics Subject Classification. Primary xxx, yyyy; Secondary xxxx, yyyy.

Key words and phrases. Functionally graded materials, Uniform magnetic field, Stress analysis, Complementary functions method, Pseudospectral Chebyshev method.

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AN APPLICATION OF MULTI CRITERIA DECISION MAKING USING INTUITIONISTIC FUZZY PROMETHEE

FERIDE TUĞRUL AND MEHMET ÇİTİL

ABSTRACT

In this paper; PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluation) method has been researched for multi criteria decision making. The aim of this paper is to proposed an application of multi criteria decision making in intuitionistic fuzzy sets. Multicriteria decision making is a well known concept that aims to select the best solution among several alternatives in decision making. In this paper; success ranking of schools has been researched in multi criteria decision making. Also the most successful school has been determined among these ranked schools. In this paper when ranking of schools success; intuitionistic fuzzy PROMETHEE method has been benefitted. Intuitionistic fuzzy PROMETHEE gives not only intuitionistic fuzzy preferences, but also intuitionistic fuzzy weights into account. It is convenient to use the intuitionistic fuzzy PROMETHEE method due to whose this benefit.

REFERENCES


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Key words and phrases. Intuitionistic fuzzy sets, Decision making, Multi criteria, PROMETHEE method.

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COUPLED ANALYSIS OF THE FUNCTIONALLY GRADED CYLINDER AND SPHERE IN TRANSIENT REGIME

M. ULUTAŞ, M. A. KIRKOŞE, AND D. YARIMPABUÇ

ABSTRACT

A hyperbolic heat conduction analysis of the functionally graded (FD) hollow cylinder and sphere are presented. It is assumed that the material properties such as heat transfer coefficient, density and specific heat are exponentially graded in radial direction. Under these conditions, partial differential equations with variable coefficients are obtained. By applying the Laplace transform to this differential equation, a linear ordinary differential equation is obtained in Laplace space. Then, the differential equation is solved numerically using the Chebyshev Pseudospectral method with high accuracy, and the solution in physical space is obtained by using the Durbin’s inversion method. The dynamic response of the temperature and heat flux in the transient regime are examined according to the specific inhomogeneity parameters. The temperature distribution along the time is compared with homogeneous material. The solutions available in the literature are used to confirm the results obtained in this study. The combined method used in this research is shown to be a well-structured, simple and effective.

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2000 Mathematics Subject Classification. Primary xxx, yyyy; Secondary xxxx, yyyy.
Key words and phrases. Hyperbolic heat conduction, Laplace transform, Chebyshev pseudospectral method, Durbin’s inverse method.

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GENERALIZATION OF INTUITIONISTIC FUZZY SUBMODULES
OF A MODULE BY USING TRIANGULAR NORMS AND
CONORMS

ÜMIT DENIZ

ABSTRACT
This study is built on the definition of Intuitionistic Fuzzy Submodules of a Module. Many researchers have used the definition of K. Atanassov’s [1] Intuitionistic fuzzy sets definition to move the definitions in classical algebra to intuitionistic fuzzy algebra. B. Davvaz, W. A. Dudek and Y. B. Jun [3] defined the Intuitionistic fuzzy submodules of a module and P. Isaac and P. J. Pearly [2] used this definition and gave some theorems about that. They used minimum and maximum operations to give that definition. In this study we replace minimum operation with triangular norms and maximum operation with triangular conorms for giving the definition of Intuitionistic (T, S)-fuzzy submodule of a module. By using this definition we move some definition and theorems in classical algebra to Intuitionistic fuzzy algebra.

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2000 Mathematics Subject Classification. 03E72, 08A72.
Key words and phrases. Intuitionistic Fuzzy Sets, Intuitionistic Fuzzy Submodules.
ON INTEGRAL INEQUALITIES FOR INVEX FUNCTIONS SATISFYING LIPSCHITZIAN REQUIREMENT

SEDA KILINÇ, ABDULLAH AKKURT, AND HÜSEYIN YILDIRIM

Abstract. Some new type of integral inequalities for functions from the Lipschitz class are obtained. These results involve some different types of integral averages for Lipschitzian functions. Special cases which are naturally included in the main results of the paper are also discussed.

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2000 Mathematics Subject Classification. Primary xxx, yyyy; Secondary xxxx, yyyy.
Key words and phrases. Fractional Integral, Riemann-Liouville Fractional Integral, Integral Inequalities.

2010 Mathematics Subject Classification. 26A33, 26D10, 26D15, 41A55.
LAPLACE TRANSFORM METHOD FOR EXACT SOLUTIONS OF SOME FRACTIONAL LINEAR DIFFERENTIAL EQUATIONS FROM DIFFERENT ORDER

A.G. KAPLAN AND M.V. ABLAY

ABSTRACT

In this paper, exact solutions of some fractional linear differential equations from different order are obtained by using Laplace transform method. The fractional order linear differential equation is transformed into an algebraic equation with Laplace transform. This algebraic equation is solved and the unknown function is found with inverse Laplace transformation. The validity and applicability of the Laplace transform method used to find the exact solution of fractional order linear differential equation are shown with the presented examples.

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Key words and phrases. Laplace transform method, Fractional order linear differential equation, Inverse Laplace transform method.
NEUTROSOPHIC VALUED FUZZY LOGIC CONTROLLER FOR SPEED CONTROL OF BRUSHLESS DIRECT CURRENT MOTOR

Y. CETINCEVIZ AND G. HACAT

ABSTRACT

In this paper, a control system based on neutrophilic logic was established. Neuro-optical fuzzy logic controller (NFLC) was created with a fuzzy inference system in Matlab. In addition, the NFLC-PID block diagram has been established to test in simulink environment with BLDC. The simulation results show that the brushless direct current motor (BLDC) has been successfully and efficiently controlled by the neuro-optical blurry logic controller.

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Key words and phrases. PMS motor, fuzzy logic controller, neutrosophic fuzzy logic controller.
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APPLICATION OF SUMUDU TRANSFORM METHOD FOR HYERS-ULAM STABILITY OF PARTIAL DIFFERENTIAL EQUATIONS

EMEL BICER

ABSTRACT

In this paper we obtain Hyers-Ulam stability of partial differential equations. Our technique depends on Sumudu transform method.

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2000 Mathematics Subject Classification. Primary 35B35, yyyy; Secondary 39B82, yyyy.
Key words and phrases. Hyers-Ulam stability, Sumudu transform method.
BIPOLAR SOFT FILTER

ORHAN DALKILIC AND NAIME DEMRTAS

ABSTRACT

In this study, we present bipolar soft filters which are defined over an initial universe using a fixed parameter set. At the same time, the concepts of bipolar soft filter subbase and bipolar soft filter base are given. In addition, we give examples in order to better understand the subject in our paper.

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2000 Mathematics Subject Classification. Primary 03E47, 54A05; Secondary 54A05,54C60.

Key words and phrases. Soft topological space, Bipolar soft topological space, Bipolar soft filter.
PARAFREE PROPERTY OF FREE ABELIAN LIE ALGEBRAS

ZEHRA VELİOĞLU

ABSTRACT

In this paper we investigate parafree property of free abelian Lie algebras. We prove that free abelian Lie algebras are parafree. Using that result we show that if $M$ is a free metabelian Lie algebra, then the derived subalgebra and terms of lower central series of $M$ are parafree. Moreover, we prove that abelian product of free abelian Lie algebras is parafree.

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2000 Mathematics Subject Classification. Primary 17B99; Secondary 17B01.
Key words and phrases. Parafree Lie algebras, Free Lie Algebras.
PARAFREE PROPERTY OF FREE ABELIAN LIE ALGEBRAS

ZEHRA VELİOĞLU

ABSTRACT

In this paper we investigate parafree property of free abelian Lie algebras. We prove that free abelian Lie algebras are parafree. Using that result we show that if $M$ is a free metabelian Lie algebra, then the derived subalgebra and terms of lower central series of $M$ are parafree. Moreover, we prove that abelian product of free abelian Lie algebras is parafree.

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2000 Mathematics Subject Classification. Primary 17B99; Secondary 17B01.
Key words and phrases. Parafree Lie algebras, Free Lie Algebras.
KENMOTSU SPACE FORM AND TORQUED VECTOR FIELD

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ABSTRACT

In this paper, we concentrate on torqued vector field $T$ on Kenmotsu space form $\tilde{M}$. Also, we deal with the submanifold $M$ of a Kenmotsu space form $\tilde{M}(c)$ endowed with a torqued vector field $T$. Finally, we analyze the submanifold $M$ admitting Ricci soliton of a Kenmotsu space form $\tilde{M}(c)$ and obtain some important results and characterizations.

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2010 Mathematics Subject Classification. 53C25, 53C40.
Key words and phrases. Kenmotsu space form, Ricci soliton, Torqued vector field.
DEFERRED CESÀRO CONULL SPACES

Ş. SEZGEK AND İ. DAĞADUR

ABSTRACT

In this study we examined deferred Cesaro mean for some sequence spaces. we defined the concepts of deferred (strongly) conull and deferred (weak) wedge spaces. We analyzed similarities and differences between these spaces. Also, we apply these results to summability domains.

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Key words and phrases. Deferred Means, Conull and Wedge Sequence Spaces.
ON THE SPECTRUM OF THE DIRAC OPERATOR WITH A SPECTRAL PARAMETER IN THE BOUNDARY CONDITION

ABID FERZULLAZADEH AND IBRAHIM NABIEV

ABSTRACT

The one-dimensional stationary Dirac system (related to the behavior of a relativistic electron in an electrostatic field) has the following canonical form:

\( BY'(x) + Q(x)Y(x) = \lambda Y(x) \)

where \( \lambda \) is the spectral parameter,

\[
B = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}, \quad Q(x) = \begin{pmatrix} p(x) & q(x) \\ q(x) & -p(x) \end{pmatrix}, \quad Y(x) = \begin{pmatrix} y_1(x) \\ y_2(x) \end{pmatrix}.
\]

Suppose that the elements \( p(x) \) and \( q(x) \) matrices \( Q(x) \) in (1) are real functions belonging to the space \( W^1_{2\pi}[0,\pi] \). By \( W^1_{2\pi}[0,\pi] \) we denote the space consisting of absolutely continuous functions defined on a segment \([0,\pi]\), which have a derivative, summable with a square on \([0,\pi]\). Consider a boundary problem generated on a segment \([0,\pi]\) by the Dirac equation (1) and the boundary conditions of the form

\[
(\alpha \lambda + \beta)y_1(0) + y_2(0) + \omega y_1(\pi) = 0,
\]

\[
-\omega y_1(0) + \gamma y_1(\pi) + y_2(\pi) = 0,
\]

where \( \alpha, \beta, \gamma, \omega \) are real numbers, and \( \alpha \omega \neq 0 \).

Many questions of inverse spectral problems for the Dirac system in the case of separated and non-separated boundary conditions are well studied (see [1–4] and the literature in them). In this paper, we study the basic properties of the eigenvalues of boundary problem (1)-(2).

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ON THE SPECTRUM OF THE DIRAC OPERATOR WITH A SPECTRAL PARAMETER IN THE BOUNDARY CONDITION

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ON THE CONTINUITY OF THE SCATTERING FUNCTION OF A NONSELFADJOINT BOUNDARY VALUE PROBLEM WITH A EIGENPARAMETER IN THE BOUNDARY CONDITION

S. GOKTAS AND KH. R. MAMEDOV

ABSTRACT

In this paper, a boundary value problem that includes a spectral parameter in the boundary condition and consisting of Sturm-Liouville equation are considered. The scattering data is defined and the inverse problem of scattering on the half line is studied for this boundary value problem. The solution of the inverse problem consists in the construction of the potential according to the scattering data. Therefore, the characteristics properties of the scattering data must be examined. Consequently, the properties of the scattering function $S(\lambda)$ are investigated and the continuity of this function is proved on real line in this study.

Spectral analysis for the boundary value problem when the spectral parameter appearing linearly on the half line was studied in [1]. The applications of the problems can also be found in wave theory of mathematical physics and geophysics [2],[3]. Also, the papers [4],[5] to which the present work is related.

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Key words and phrases. Scattering data, Scattering function, Sturm-Liouville problem, Continuity of scattering function.
ON REPRESENTATIONS OF SOME ENTIRE FUNCTIONS

LEYLA MAMMADOVA

ABSTRACT

The work is devoted to the establishment of representations for some entire functions of exponential type with given zeros. Such representations play an important role in solving inverse problems for differential operators (see, for instance, [1-3]).

The functions $u(\lambda)$ and $v(\lambda)$ have the following representations:

$$
u(\lambda) = \sin \pi \lambda - \frac{\beta}{2} \left[ \cos \pi \lambda - \cos (2a - \pi) \lambda \right] - A_1 \frac{4 \lambda}{4 \lambda^2 - 1} \cos \pi \lambda - \frac{\beta A_1 \sin \pi \lambda}{2 \lambda} +$$

$$+ \frac{\beta A_2 \sin (2a - \pi) \lambda}{2 \lambda} + f_1(\lambda),$$

$$v(\lambda) = \cos \pi \lambda + \frac{\beta}{2} \left[ \sin \pi \lambda + \sin (2a - \pi) \lambda \right] - \beta A_1 \frac{2 \lambda}{4 \lambda^2 - 1} \cos \pi \lambda + A_1 \frac{\sin \pi \lambda}{\lambda} +$$

$$+ \frac{\beta A_2}{4 (2a - \pi)^2 \lambda^2 - \pi^2} \cos (2a - \pi) \lambda + \frac{f_2(\lambda)}{\lambda},$$

where

$$f_j(\lambda) = \int_{-\pi}^{\pi} \tilde{f}_j(t)e^{it\lambda} dt, \quad \tilde{f}_j(t) \in L_2 [-\pi, \pi], \quad j = 1, 2,$$

$$f_1(0) = f_1'(0) = 0, \quad f_2(0) = 0,$$

necessary and sufficient to

$$u(\lambda) = \pi \prod_{k=-\infty, k \neq 0}^{\infty} \lambda_k - \frac{1}{\lambda_k^2}, \quad \lambda_k = \lambda_k^0 + \beta_k \frac{1}{k},$$

$$v(\lambda) = \prod_{k=-\infty, k \neq 0}^{\infty} \frac{\nu_k - \lambda}{\nu_k^0}, \quad \nu_k = \nu_k^0 + \beta_k \frac{1}{k},$$

where $\lambda_k^0$ and $\nu_k^0$—zeros of functions

$$\Delta_1^0(\lambda) = \frac{\sin \lambda \pi}{\lambda} - \beta \frac{\cos \lambda \pi - \cos \lambda (2a - \pi)}{2 \lambda}.$$
\[ \Delta_2^0(\lambda) = \cos \lambda \pi + \frac{\beta}{2} \left[ \sin \pi \lambda + \sin \lambda (2a - \pi) \right] \]

and

\[ b_k = \frac{1}{\lambda_k^0 \Delta_1^0(\lambda_k^0)} \Re \left[ A_1 \left( 1 - \frac{i\beta}{2} \right) e^{i\lambda_k^0 \pi} - \frac{i\beta A_2}{2} e^{i\lambda_k^0 (2a - \pi)} \right], \]

\[ c_k = -\frac{1}{\Delta_2^0(\nu_k^0)} \Im \left[ A_1 \left( 1 - \frac{i\beta}{2} \right) e^{i\nu_k^0 \pi} - \frac{i\beta A_2}{2} e^{i\nu_k^0 (2a - \pi)} \right] \]

bounded sequences, \( \beta, A_1, A_2 \) — some real numbers.

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ON THE GAUSS MAP OF TRANSLATION HYPERSURFACES IN 4-DIMENSIONAL EUCLIDEAN SPACE

G. AYDIN ŞEKERCI, S. SEVİNÇ, AND A.C. ÇÖKEN

ABSTRACT

In this study, we investigate hypersurfaces which are obtained as the sum of three curves and are called translation hypersurfaces. We research the Gauss map of translation hypersurfaces in the 4-dimensional Euclidean space and specially, we examine translation hypersurfaces whose Gauss map satisfies the condition $\Delta G = AG$, where $\Delta$ denotes the Laplacian of the hypersurface and $A$ is a $4 \times 4$ real matrix. So, we obtain some classifications for such hypersurfaces and give the generalizations about them.

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GAUSS MAP OF TRANSLATION HYPERSURFACES

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STUDENT OPINIONS ON THE USE OF TECHNOLOGY IN MATHEMATICS TEACHING AND COMPUTER AIDED TEACHING

ORKUN COŞKUNTUNCEl and MUHAMMET KİMSESİZ

ABSTRACT

In this study, it is aimed to examine the results of 40 researches about computer use in mathematics teaching within the country and abroad and to determine the views of students about VUstat software and mathematics teaching. “VUstat Questionnaire” including 14 items was used as a data collection tool. With this survey study, the opinions of 49 students studying 7th grade from two different schools in different neighborhoods of Toroslar district of Mersin province were gathered about teaching “Data Analysis” subject which is in 7th grade mathematics lesson curriculum with VUstat software (n=24,25). In addition, the results of 40 studies on computer-assisted mathematics teaching were examined according to statistics, geometry and mathematics fields. With this research; the views which are computer-aided (VUstat software) teaching makes students effective in learning the subject, easy to learn concepts, the course enjoyable, stop losing the time were reached and it is concluded that computer-aided teaching is more effective in the field of geometry in increasing success.

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 APPROXIMATION OF THE COMMON SOLUTION SET OF TWO-DIMENSIONAL LYAPUNOV EQUATIONS

ŞERİFE YILMAZ

ABSTRACT

The existence of common quadratic Lyapunov function for a finite number of stable matrices is very important problem of linear time-invariant systems. This solution can be determined by solving a convex program. With the exception of some special cases (second-order systems, for example), the theoretical solution to the general n-dimensional problem has not been found yet. Therefore numerical optimization methods are used to solve the problem. In this study, we obtained a set of common solutions for a finite number of two-dimensional matrices.

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