

Contents

MATHEMATICS

- V. Balan, S. Ikeda
Structural considerations on the theory of gravitational fields in finler spaces - II 3
- Poliana Stefanescu, S. C. Stefanescu
The properties of a polarization index for bounded exponential distributions 9
- Irina Bucurescu, Manuela Magureanu
Some remarks about abstract families of fuzzy languages 21
- C. Pana
Wavelets, properties of the scalar function 27
- Marina Iuga
The numerical solving of a non linear integral equation of hammerstein type 35
- Elena Corina Cipu
Wave propagation through a nozzle with elastic walls 47
- Alexandra Colojoara
The seasonal variance and covariance of time series 57

PHYSICS

- Ecaterina Niculescu
Electron eigenstates in magnetoelectronic subbands 67

STRUCTURAL CONSIDERATIONS ON THE THEORY OF GRAVITATIONAL FIELDS IN FINSLER SPACES – II

V. BALAN, S. IKEDA

Several concrete modified connection structures associated with the Finslerian gravitational field are considered, by specializing or generalizing the independent variables in various ways. The physical relevance of the adapted bases and connection and metrical structures are discussed from physical viewpoint.

THE PROPERTIES OF A POLARIZATION INDEX FOR BOUNDED EXPONENTIAL DISTRIBUTIONS

Poliana STEFANESCU, S.C. STEFANESCU

In the literature are presented different coefficients to measure the polarization level of the income for the individuals from a given population P . The polarization index $D_(f)$ proposed in [14], [15] computes the difference between the poles of two disjoint groups which are determined by the probability density function $f(x)$ of the income values of P . The paper [15] gives the expression of the coefficient $D_*(f)$ for exponential $\text{Exp}(q, a, b)$ distributions having the support $[a, b]$. In this case the index $D_*(f)$ depends on a single parameter, that is $I = q(b-a)$.*

Considering an $\text{Exp}(q, a, b)$ distribution, in the present work are suggested bounds for the coefficient $D_(f)$ and are also emphasized different other properties of this polarization index.*

SOME REMARKS ABOUT THE ABSTRACT FAMILIES OF FUZZY LANGUAGES

Irina BUCURESCU, Manuela MAGUREANU

One proves that the abstract families of fuzzy language are closed under both the e -free fuzzy GSM (generalized sequential machines) application and the inverse fuzzy GSM application, respectively.

WAVELETS, PROPERTIES OF THE SCALAR FUNCTIONS

C. PANA

To build a convenient wavelet Ψ a multiresolution analysis is necessary and sufficient. The multiresolution analysis is connected to the scalar function. In this article / paper we present some properties of the scalar function applying the Fourier transform. The choice of the wavelet Ψ is essential. The problem is to adapt Ψ to a certain class of signals, for example vocal or musical signals.

THE NUMERICAL SOLVING OF A NON LINEAR INTEGRAL EQUATION OF HAMMERSTEIN TYPE

Marina IUGA

This article tries to achieve a summary of one of the most well known numerical methods for solving integral equations.

In the same time some elements about dead water-theory will be remind.

The original part of this article is represented by the solving of a Hammerstein equation, which can be found in the dead-water theory, and it will be demonstrated that it can be solved using numerical methods.

WAVE PROPAGATION THROUGH A NOZZLE WITH ELASTIC WALLS

Elena Corina CIPU

Study of small perturbations propagation in a simple flow-structure problem shall be made. The flow of a compressible inviscid and isentropic fluid through a nozzle with elastic walls is presented. In presence of a coupling with a structural element bounding the fluid we investigate the influence of Mach number of the unperturbed flow on the speed of propagating waves.

THE SEASONAL VARIANCE AND COVARIANCE OF TIME SERIES

Alexandra COLOJOARA

We will introduce the notions of seasonal variation of a time series and seasonal covariance of two time series, that will permit us to obtain the seasonal coefficient of the regression, similar to the regression coefficient, and determine the cases when the two coefficients coincide.

ELECTRON EIGENSTATES IN MAGNETOELECTRONIC SUBBANDS

Ecaterina NICULESCU

The single-particle states of electron and heavy-hole in a quantum wire in the presence of an axial magnetic field are calculated by an analytical method introduced herein. The quantum wire is assumed to be a cylinder of GaAs material surrounded by $Al_{0.3}Ga_{0.7}As$, with finite confinement potentials. It is significant that a comparison of the ground-state energies and of the radial widths of the wave function with those computed by a variational method shows good quantitative agreement for varying wire radii and magnetic field strengths. The method is fast computationally and can be readily extended to calculate energies of higher excited states.