ABSTRACTS

M.A. Abdullin, N.S. Ismagilov, F.S. Nasyrov

One dimensional stochastic differential equations: pathwise approach

Abstract. We study path-wise analogues of one dimensional stochastic differential equations with symmetric integrals. We find existence and uniqueness conditions for solutions, the conditions of continuity and differentiability w.r.t. a parameter, as well as the conditions of linearization for such equations. We also study the structure of the solutions.

Keywords: symmetric integral, differential equations with symmetric integral.

G.G. Braichev

Exact relationships between certain characteristics of growth for complex sequences

Abstract. We establish exact estimates relating the classical densities of complex sequences (ordinary and averaged) with relative densities and lacunarity and sparsity indices.

Keywords: the upper and lower (average) densities, lacunarity and sparsity indices of sequence.

B.V. Vinnitskii, V.N. Dilnyi

On generalization of Paley-Wiener Theorem for weighted Hardy spaces

Abstract. We consider the Hardy space $H_\sigma^p(\mathbb{C}_+)$ in the half-plane with an exponential weight. In this space we study the analytic continuation from the boundary. In the previous works for the case $p \in (1, 2]$ a result on analytic continuation from the imaginary axis was obtained, and it was a generalization of Paley-Wiener theorem. But for many applications the case $p = 1$ is more interesting. For this case in the paper we obtain estimates for a function satisfying certain standard conditions.

Keywords: weighted Hardy space, Paley-Wiener theorem, angular boundary values.

M.G. Gadoev, S.A. Iskhokov

Spectral properties of degenerate elliptic operators with matrix coefficients

Abstract. In the work we study some spectral properties of the non-self-adjoint operator A in the space $\mathcal{H}^l = L_2(0,1)^l$ associated with a noncoercive sesquilinear form. We address the issues on completeness of a system of root vector-functions for operator A in $\mathcal{H}^l$, description of the domain of operator A, estimating resolvent of operator A and asymptotic distribution of eigenvalues of operator A.

Keywords: elliptic differential operators, resolvent of operator, distribution of eigenvalues, system of root vector-functions.

A.M. Gaisin

Minimum of modulus of the sum of Dirichlet series converging in a half-plane

Abstract. The estimate of the sum of Dirichlet series near the convergence line and outside some exceptional set of disks is obtained in terms of minimum of modulus on continuums close to vertical line segments. This result generalizes the known theorem on minimum of modulus on vertical segments lying in the convergence half-plane.

Keywords: Dirichlet series, convergence half-plane, minimum modulus theorem.

I.I. Golichev

Modified gradient fastest descent method for solving linearized non-stationary Navier-Stokes equations

Abstract. We introduce a regularization of Navier-Stokes equations, whose solution coincides with the solution to the system of Navier-Stokes equations if the latter exists. The regularized nonlinear system is reduced to solving a sequence of linearized systems. To solve the latter system, we employ the gradient method. We construct and justify a modified method of fastest descent, which may be employed under restrictions on the control and an unbounded Lebesgue set.

Keywords: Navier-Stokes equations, gradient method, regularization, apriori estimates.

E.E. Dikarev

On the Bernstein inequality for vectors in Banach spaces

Abstract. We obtain Bernstein inequality for the vectors in the Banach space of the isometric representation of a one-parametric group of the operators. We introduce the notion of an entire at infinity function. For such functions and for the norms of commutation operators we obtain Bernstein inequality.

Keywords: Banach modulus, isometric representation, Beurling spectrum, entire function, commutation operator.

O.A. Krivosheyeva
Convergence domain for series of exponential polynomials

Abstract. In this paper we study the convergence of exponential polynomials series constructed by almost exponential sequences of such polynomials. Particular cases of such series are series of exponential monoms, exponential series, Dirichlet series and power series. We obtain an analogue of Abel theorem for these series implying in particular results on continuation of convergence. An analogue of the Cauchy–Hadamard theorem is obtained as well. We give a formula allowing one to recover the convergence domain for these series by their coefficients. The obtained results include results relating with Abel and Cauchy–Hadamard theorems for exponential monoms series, exponential series, Dirichlet series and power series.

Keywords: exponential polynomial, convex domain, exponential series, invariant subspace, convergence domain.

V.V. Napalkov(Jr.)
Orthosimilar expansion systems in space with reproducing kernel

Abstract. We study expansion system similar to orthogonal ones (orthosimilar systems) in Hilbert spaces with reproducing kernel. We establish the equivalency of two definitions of orthosimilar system. We show the relation of orthosimilar system with the problem on description of the adjoint space to a Hilbert space in terms of a special system of functions.

Keywords: Bergman space, Hilbert spaces, reproducing kernel, Hilbert space with reproducing kernel, Paley-Wiener theorem.

A.V. Panov
Group classification of a class of semilinear pseudoparabolic equations

Abstract. Group classification is implemented for a pseudoparabolic partial differential equation with two parameters. Equivalence transformations groups are found and used for classification of the equation parameters. Kernels of principal symmetries groups are found for the equations. Principal symmetries groups are found for specifications of parameters expanding the kernel of transformations groups. The obtained submodels are summarized in a table at the end of the paper.

Keywords: Lie algebra, group classification, submodels programm.

A.Yu. Trynin
On inverse nodal problem for Sturm-Liouville operator

Abstract. In this paper we proposed a solution to some inverse Sturm-Liouville problem, which allows one to determine the potential and the boundary conditions of the differential operator on the values of one of the differentials of Gateaux zeroes $x_{k,n}[q] \in (0, \pi)$ of some eigenfunction $\hat{y}(x, q, \lambda_n[q])$ for an increment w from the set $\mathbb{W}$. As $\mathbb{W}$, we consider some sets of classical and generalized functions.

Keywords: eigenfunction of Sturm-Liouville problem, nodal points of Sturm-Liouville problem, Gateaux differential, inverse Sturm-Liouville problem, inverse nodal problem, nodal points.