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**WOLD DECOMPOSITION FOR OPERATORS
CLOSE ISOMETRIES**

Laura MANOLESCU

Abstract. The Wold decomposition theorem is used to decompose a wide sense stationary random process into its deterministic and purely nondeterministic parts and, also, has an important role in signal processing, factorization theory and the description of dilations in Hilbert spaces. In geometric language, this means that an isometry is a direct sum between an unitary operator and a shift. In Bergman and Dirichlet spaces, the shift operator is not an isometry, but it is a left invertible operator. In this paper we give conditions on the left invertible operators such that a operator version, in the sense of Rosenblum and Rovnyak, of the Wold decomposition to take place.

Keywords and phrases: Wold decomposition, wandering subspace, left invertible operators, random processes, frames in Hilbert spaces

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**ON UNIFORM DICHOTOMY
WITH DIFFERENTIABLE GROWTH RATES
IN BANACH SPACES**

Ariana GĂINĂ

Abstract. In this paper is considered the concept of uniform dichotomy with differentiable growth rates for skew-evolution cocycles in Banach spaces which includes as particular case, the well-known concept of uniform exponential dichotomy. Necessary and sufficient conditions are presented using invariant families of projectors.

Keywords and phrases: uniform h-dichotomy, uniform exponential dichotomy, skew-evolution cocycles.

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SECTION METHOD AND FRECHET POLYNOMIALS

Dan M. DĂIANU

Abstract. Using the section method we characterize the solutions $f : U \rightarrow Y$ of the following four equations:

$$\sum_{i=0}^n (-1)^{n-i} \binom{n}{i} f \left(\sqrt[n]{u^m + iv^m} \right) = (n!) f(v),$$

$$f(u) + \sum_{i=1}^{n+1} (-1)^i \binom{n+1}{i} f \left(\sqrt[n]{u^m + iv^m} \right) = 0,$$

$$\sum_{i=0}^n (-1)^{n-i} \binom{n}{i} f \left(\arcsin |\sin u \sin^i v| \right) = (n!) f(v) \text{ and}$$

$$f(u) + \sum_{i=1}^{n+1} (-1)^i \binom{n+1}{i} f \left(\arcsin |\sin u \sin^i v| \right) = 0,$$

where $m \geq 2$ and n are positive integers, $U \subseteq \mathbb{R}$ is a maximally relevant real domain and $(Y, +)$ is an $(n!)$ -divisible Abelian group.

Keywords and phrases: monomial, Frechet polynomial, section method.

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CURRENT DISTRIBUTION IN A MASSIVE COATED HOLLOW CONDUCTOR IN THE PRESENCE OF A FILAMENT

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Abstract. In this paper we present separate rigorous analyses of the skin and proximity effects in an inhomogeneous conductor in the presence of a filament. The conductor consists of a massive hollow circular conductor coated with a thin layer of different conductivity. The skin and proximity solutions are assumed in the form of two infinite sums of the proper harmonics. The unknown coefficients in the skin-effect case are found by applying boundary conditions, while a system of two integral equations is used to determine the unknown coefficients in the proximity-effect case, with no boundary conditions involved. By using the found current density we derive formulas for the conductor power loss.

Keywords and phrases: skin effect, proximity effect, inhomogeneous conductor, filament, current distribution, integral equation.

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THE ENERGY-CASIMIR MAPPING OF THE JERK VERSION OF AN ANHARMONIC OSCILLATOR

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Abstract. In this paper we study the stability and some special orbits of an one-parameter Hamilton-Poisson jerk system, namely the jerk version of an an-harmonic oscillator. Moreover, we point out some properties of the energy-Casimir mapping associated to this system.

Keywords and phrases: Energy-Casimir mapping, stability, periodic orbit, equilibrium point

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THE DETERMINATION OF THE STATISTICAL DISTRIBUTION FUNCTION IN THE TESTING OF PRODUCT LIFE

Marius Valentin BOLDEA

Abstract. In this paper I consider that a series type system is a system that functions only if all its components are functioning. In case that the distribution functions for all the components of a series type system are known, then the distribution function of the whole system is given by relation (9). Particular cases are analysed when the components are exponential distributions of the Weibull or Rayleigh type.

Keywords and phrases: statistical distribution, testing of product life

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