

## Summaries of articles published in this issue

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## SUMMARIES OF ARTICLES PUBLISHED IN THIS ISSUE

(Publication of these summaries is permitted)

IVO VRKOČ, Praha: *Some maximum principles for stochastic equations*. Czech. Math. J. 19 (94), (1969), 569—604. (Original paper.)

In this article the author considers diffusion processes  $\mathcal{M}$  in a region  $D$  which are governed by Ito stochastic equation (\*)  $dx = a(t, x) dt + B(t, x) dw(t)$ . The probability that the first exit time of  $\mathcal{M}$  from the region  $D$  is less than a given number  $T$  is important in many problems. Denote by  $P(\mathcal{M})$  this probability. The author deals with classes of diffusion processes  $\mathcal{M}$  for which the drift  $a(t, x)$ , i.e. the “non-stochastic part” of equation (\*) is a given vector function, but the matrix of the local diffusion  $B(t, x)$ , i.e. the “stochastic part” of (\*) can vary in a class. The question arises how the probability  $P(\mathcal{M})$  depends on the matrix  $B(t, x)$ .

KAREL SEGETH, Praha: *On universally optimal quadrature formulae involving values of derivatives of integrand*. Czech. Math. J. 19 (94), (1969), 605—675. (Original paper.)

The paper deals with formulae for the numerical integration of  $2\pi$ -periodic functions including the values of derivatives of the integrand at the knots. Some formulae are constructed using the values of the integrand and its first and second derivative, optimal in the given Hilbert space, and formulae of the same type universally optimal in certain classes of Hilbert spaces. The comparison of the inaccuracy of the formulae with or without the values of the second derivative of the integrand at the equidistant knots is made. This comparison is illustrated by a numerical example. Further, the inaccuracy of the formulae of the same type with equidistant and, in general, non-equidistant knots is compared.

OLDŘICH KOWALSKI, Praha: *Immersions of Riemannian manifolds with a given normal bundle structure*. Czech. Math. J. 19 (94), (1969), 676—696. (Original paper.)

In this paper the author characterizes a global immersion of a simply connected Riemannian manifold  $M$  into a Riemannian manifold with the constant curvature. For this purpose the following objects are used alternatively: a) A Riemannian vector bundle over  $M$  provided with an additional structure, b) a system of covariant tensors of degree 2, 4, ...,  $2r$ , c) a system of matrix forms of degree 2 and 1.

JAROMÍR SUCHOMEL, Brno: *Wronskische Determinanten von Lösungen iterierter Gleichungen*. Czech. Math. J. 19 (94), (1969), 711—715. (Original-artikel.)

In der Arbeit werden Formeln für Berechnung der Wronskischer Determinanten von Lösungen iterierter Differentialgleichungen abgeleitet.

BEDŘICH PONĎELÍČEK, Poděbrady: *A contribution to the foundations of network theory using the distribution theory.* Czech. Math. J. 19 (94), (1969), 697—710. (Original paper.)

The paper deals with the properties of some operators mapping the system of all distributions into itself. First of all, Author introduces the notion of the derivative of a system of distributions  $\{f_a\}$  with respect to the parameter  $a$  as well as of the integral  $\int_{-\infty}^{\infty} f_a da$  which is a distribution of  $\mathbf{D}$  if the system  $\{f_a\}$  fulfils some conditions. Making use of the properties of these notions, the integral  $\int_{-\infty}^{\infty} (x, f_a) da$  (\*) is defined where  $x$  is an arbitrary distribution from  $\mathbf{D}$  and  $\{f_a\}$  is a system of distributions with certain properties. Especially, a theorem is proved on the continuous dependence of the integral (\*) on a parameter in the sense of the convergence in  $\mathbf{D}$ , etc. The main result of the paper is a theorem asserting that any linear and continuous operator  $T: \mathbf{P} \rightarrow \mathbf{D}$  where  $\mathbf{D}_* \subset \mathbf{P} \subset \mathbf{D}$  ( $\mathbf{D}_*$  being the system of all distributions of finite order) is given by an integral (\*) where  $f_a = T\delta_a$ . Further necessary and sufficient conditions are proved for an operator given by an integral (\*) to be autonomous or causal.

ZDENĚK HUSTÝ, Brno: *Beitrag zu einem Satz von Ráb.* Czech. Math. J. 19 (94), (1969), 716—722. (Originalartikel.)

In dieser Arbeit beschäftigt sich der Verfasser mit einer asymptotischen Reihe, welche Lösungen homogener linearer Differentialgleichungen als ihre asymptotische Entwicklung besitzt und die in einer Arbeit von Ráb angeführt ist.

ZDENĚK HUSTÝ, Brno: *Asymptotische Eigenschaften perturbierter iterierter Differentialgleichungen.* Czech. Math. J. 19 (94), (1969), 723—737. (Originalartikel.)

In dieser Arbeit werden asymptotische Eigenschaften der Lösungen einer perturbierten iterierten Differentialgleichung von der Form (\*)  $Z^{(n)} + \sum_{i=1}^n \binom{n}{i} [f_i^n(a_1, a_2) + p_i] Z^{(n-i)}(x) = 0$  untersucht. Mit Hilfe asymptotischer Abschätzungen von Lösungen der Gleichung  $y'' + (3/(n+1))(a_2 - a_1 - a_1^2)y = 0$  werden asymptotische Darstellungen der Lösungen von \*) bewiesen und an Hand von Beispielen erläutert.

IZU VAISMAN (Jassy): *Sur la partie d'une hypersurface, où le tenseur asymptotique est du type hyperbolique normal.* Czech. Math. J. 19 (94), (1969), 750—757. (Mémoire scientifique original.)

On considère une portion connexe d'une hypersurface de l'espace euclidien, où le tenseur asymptotique est du type hyperbolique normal et on étudie: une structure presque-produit canoniquement associée, la courbure sectionnelle et une nouvelle métrique, qui peuvent être définies sur cette portion de l'hypersurface envisagée.