Aplikace matematiky

Summaries of Papers Appearing in this Issue

SUMMARIES OF PAPERS APPEARING IN THIS ISSUE

(These summaries may be reproduced)

SUNIL DATTA, Lucknow: *Unsteady motion around a uniformly deforming rotating cylinder.* Apl. mat. 19 (1974), 371—374. (Original paper.)

In the present note the unsteady motion around a cylinder in an infinite viscous medium is studied. The initial motion is that due to steady rotation and the unsteadiness is introduced when the cylinder begins to deform. It is found that the viscous stress increases for an expanding cylinder and decreases for a contracting one.

JAN ÁMOS VÍŠEK, Praha: *On properties of binary random numbers.* Apl. mat. 19(1974), 375—385. (Original paper.)

Let $\{X_k\}_{k=1}^{\infty}$ be a sequence of independent zero-one random variables (rv) with $P(X_k = 1) = \frac{1}{2} + \Delta$. Then we define the binary random number (brn) $Y = \sum_{k=1}^{\infty} X_k 2^{-k}$. An ideal generator produces 0 and 1 with equal probability, but a real one does it only approximately. The purpose of this paper is to find distribution of brn for $-\frac{1}{2} < \Delta < \frac{1}{2}$ (also $\Delta = \Delta_k$). Particularly, convergence of the normed sum of brn to normally distributed rv is studied by means of Edgeworth expansion.

LUKÁŠ PELLAR, Praha: *Isomorphisms of mendelian populations.* Apl. mat. 19(1974), 386—391. (Original paper.)

The notion of population, mendelian population, isomorphism of populations, phenotype system, phenogram are formalized. The one-one correspondence between isomorphisms of the mendelian population and permutations of the sets of alleles and the set of loci is shown.

MARIE ŠIKULOVÁ, Brno: *Stochastic model of accelerated testing methods of fatigue.* Apl. mat. 19(1974), 392—402. (Original paper.)

In the present paper a new approach to the accelerated test problem is proposed. A quite general model is worked out, which describes the stochastic process taking place in the course of the tests. The stochastic description of the process which has been, till now, considered deterministic gives the possibility of a new interpretation of the material constants and their estimation.

KAREL SEGETH, Praha: *Universal approximation by systems of hill functions.* Apl. mat. 19 (1974), 403—436. (Original paper.)

Let $\{\omega_y\}$ be a system of infinitely smooth rapidly decreasing functions and $\eta(h)$ a certain increasing function, $\eta(0) = 0$. Then the approximation sought in the form $\Sigma c_k \omega_{\eta(h)}((x/h - k)\, \eta(h))$ is universal, i.e., for any approximated function f, the system $\{\omega_y\}$ of hill functions gives the best possible order of approximation limited only by the smoothness of f.

Moreover, the system $\{\omega_y\}$ can be chosen so that the Fourier transform of ω_y has zeros at the points $\pm 2\pi j/y$; $j = 1, \ldots, J$. As a consequence, the error of the approximation decreases.