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D. Srinivasa Charya and T. K. V. Iyengar

ROTARY OSCILLATIONS OF AN APPROXIMATE SPHERE IN AN
INCOMPRESSIBLE MICROPOLAR FLUID

129-144

Abstract: In this paper, the flow generated by the rotary oscillations of an approximate sphere in an incompressible micropolar fluid is studied. The velocity component and the microrotation components are evaluated in terms of modified Bessel functions and Gegenbauer's functions. The couple acting on the approximate sphere is evaluated and expressed in terms of two parameters K and K' . The variation of K and K' is studied numerically with respect to micropolarity parameters, geometric parameter and oscillation parameter. The results are presented in the form of graphs. The special cases of a sphere and an oblate spheroid are deduced.

P. S. Deshwal and S. Mudgal

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Ling-Yun Gao

ON SOME GENERALIZED HIGHER-ORDER ALGEBRAIC DIFFERENTIAL
EQUATIONS WITH ADMISSIBLE ALGEBROID SOLUTIONS

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Ahmed E. Radwan, Saad M. Sileem and Amaal A. Ashour

HYDROMAGNETIC INSTABILITY OF A COMPRESSIBLE GAS JET STREAMS IN
A STREAMING IDEAL FLUID

177-196

Abstract: The magnetodynamic (MHD) instability of a compressible streaming gas cylinder dispersed in an inviscid-incompressible fluid has been developed. The model is, perfectly conducting, acting upon it the compressibility effects, capillary, inertia and electromagnetic forces. The MHD basic equations are linearized and we obtained a characteristic value problem of perturbations. The stability criterion, valid for all

axisymmetric and non axisymmetric modes of perturbations is derived and studied and moreover the results are confirmed numerically for some cases. It is found that the compressibility effects have a stabilizing tendency as the intensity of the applied magnetic field is so strong enough. The electromagnetic force axial magnetic field is stabilizing while the streaming has always a destabilizing influence for all short and long wavelengths. The capillary force is destabilizing for small wavenumbers and not affected by the compressibility factor.

V. C. C. Raju, K. P. R. Rao and G. S. S. Bhisma Rao

FIXED POINT THEOREMS IN D-COMPACT METRIC SPACES

197-202

Abstract: In this paper we obtain a generalization of a fixed point theorem of Dhage in a D -metric space. Also we obtain a fixed point theorem for a pair of self maps satisfying Jungck type condition in a compact D -metric space.

P. Thirupathi Reddy

CERTAIN CLASSES OF q -VALENT FUNCTIONS WITH NEGATIVE COEFFICIENTS 203-211

Abstract: Let $P_q^*(\alpha, \beta, \mu)$ (q a fixed integer greater than zero) denote the class of functions of the form

$$f(z) = z^q - \sum_{n=1}^{\infty} |a_{q+n}| z^{q+n}$$

analytic and q -valent in $|z| < 1$ for which

$$\left| \frac{\frac{f'(z)}{z^{q-1}} - q}{\mu \frac{f'(z)}{z^{q-1}} + q - (1 + \mu)\alpha} \right| < \beta, (|z| < 1)$$

where $0 \leq \alpha < 1, 0 < \beta \leq 1$ and $0 \leq \mu \leq 1$. Sharp results concerning coefficient estimates, a distortion theorem and radius of convexity for the class $P_q^*(\alpha, \beta, \mu)$ are determined. Furthermore, it is proved that the class $P_q^*(\alpha, \beta, \mu)$ is closed under arithmetic mean and convex linear combinations.

Saher Abdullah Salman Al-Hadab, S. M. Khaleelulla and Mohammad Ali Al-Ghamdi

S-HYPERBARRELLED SPACES

213-221

Abstract: In this paper, we introduce a new class of topological vector spaces called S -hyperbarrelled spaces. We study some properties of S -hyperbarrelled spaces. We also give an example. Two of the well-known results of functional analysis are the Banach-Steinhaus theorem and the closed graph theorem. We obtain analogues of these two theorems for S -hyperbarrelled spaces.

Stevo Stević

A NOTE ON BOUNDED SEQUENCES SATISFYING LINEAR INEQUALITIES

223-230

Abstract: In this paper we give proof to following theorem: Let $\alpha_i (i = \overline{0, k-1})$ be real, $\sum_{i=0}^{k-1} \alpha_i = 1, P_k(z) = z^k - \alpha_{k-1} z^{k-1} - \dots - \alpha_0$ and let the real sequence (a_n) satisfy the inequality

$$a_{n+k} \leq \alpha_{k-1} a_{n+k-1} + \dots + \alpha_0 a_n (n \in N).$$

The boundedness of (a_n) implies its convergence if and only if the zeros of the polynomial $P_k(z)$ belong to the set $\mathbf{C}/\{z : |z| = 1, z \neq 1\}$.

M. K. R. S. Veera Kumar

\hat{g} -LOCALLY CLOSED SETS AND $\hat{G}LC$ -FUNCTIONS

231-247

Abstract: In this paper \hat{g} -locally closed sets and different notions of generalizations of continuous functions, namely, $\hat{G}LC$ -continuity, $\hat{G}LC^*$ -continuity, $\hat{G}LC^{**}$ -continuity, $\hat{G}LC$ -irresoluteness, $\hat{G}LC^*$ -irresoluteness, $\hat{G}LC^{**}$ -irresoluteness and sub- $\hat{G}LC^*$ -

continuity are introduced for topological spaces along with some of their characterizations and some interrelationships. These notions fall strictly in between the respective notions of generalizations of continuous maps introduced by Ganster and Reilly [8] and Balachandran, Sundaram and Maki [3]. Further \hat{g} -submaximal spaces are defined. It is proved that Pasting Lemma holds good for $\hat{G}LC^{**}$ -continuous functions and $\hat{G}LC^{**}$ -irresolute functions but not for $\hat{G}LC^*$ -continuous functions. As an application of \hat{g} -closed sets, we introduce a new separation axiom T_f which is weaker than both T_b and $T_{1/2}$ axioms.

Norbert Hungerbühler and Robert Zwhalen

AN ALGEBRAIC METHOD FOR EIGENVALUE PROBLEMS

249-261

Abstract: If for a linear symmetric (unbounded) operator F and a linear operator S holds

$$FSq(F) = Sp(F)$$

on the span of the eigenspaces of F for two polynomials p and q , then S is a raising operator. This means roughly that if $Fy_i = \lambda_i y_i$, then $y_{i+1} := Sy_i$ is an eigenvector of F with eigenvalue $\lambda_{i+1} = \frac{p(\lambda_i)}{q(\lambda_i)}$. Also an inverse statement of this kind holds true. We use this technique in order to discuss several eigenvalue problems. Similarly, we consider lowering operators T and discuss commutator relations between S and T .
