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**On the convergence rate of collocation methods for Volterra integral equations with weakly singular oscillatory trigonometric kernels**

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**T**his talk originates from the investigation of nonlinear fractional integral equations with Erdelyi-Kober fractional operator. In this work the solution of the fractional Volterra-Fredholm integral equations of the second kind is presented. The proposed method is based on the homotopy perturbation method, which consists in constructing the series whose sum is the solution of the problem considered. The problem of the convergence of the series constructed is formulated and a proof of the formulation is given in the work. Additionally, the estimation of the approximate solution errors obtained by taking the partial sums of the series is elaborated on. Moreover, some examples to illustrate the usefulness of our results. Variational inequality theory contains a wealth of new ideas and techniques. Variational inequality theory, which was introduced and considered in early sixties, can be viewed as a natural extension and generalization of the variational principles. It is amazing that a wide class of unrelated problems, which arise in various different branches of pure and applied sciences, can be studied in the general and unified framework of variational inequalities.

**Biography**

Dr. Lakshmi Narayan Mishra is working as Assistant Professor Senior in the Department of Mathematics, School of Advanced Sciences, Vellore Institute of Technology (VIT) University, Vellore, Tamil Nadu, India. His research interests are in the areas of pure and applied mathematics including Fractional Integral and Differential equations, Measure of Noncompactness, Local and Global attractivity, Approximation Theory, Special Functions, Nonlinear analysis, Fourier approximation, Fixed Point Theory and its Applications, q-series and q-polynomials, Signal analysis and Image processing etc. He has published more than 100 research papers in reputed international journals of mathematical and engineering sciences and having more than 2181 google scholar citations. He is referee and editor of several international journals in frame of pure and applied mathematics. He has presented research papers and delivered invited talks at several International and National conferences, STTPs, Seminars, Workshops, FDPs in India and abroad.

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