Analytic Approximate Solution for Harmonic Oscillator Equation with Fractional Order Damping Term

Prabhat Kumar^{1*}, Vineet Srivastava², M. M. Dixit³

¹Department of Applied Sciences & Humanities, NERIST, Nirjuli, Department of Mathematics, A. P., India ²Department of Applied Sciences and Humanities, Rajikiya Engineering College, Azamgarh, India ³Department of Applied Sciences & Humanities, NERIST, Nirjuli, Department of Mathematics, A. P., India

*Corresponding Author

ABSTRACT

In this paper, analytical and numerical results are reported on the approximate solution for harmonic oscillator equation with fractional order damping term by Adomian Decomposition Method (ADM). The ADM solution is then compared with the well-known series solution of the problem. It is found that the results lead to an excellent agreement. The graphical representation of the solution has been presented for different values of damping coefficient and frequency of the oscillator.

Keywords: ADM, harmonic oscillator, Power series method.



© 2022 Copyright held by the author(s). Published by AIJR Publisher in "Book of Abstracts of the 2nd International Conference on Applied Mathematics and Computational Sciences (ICAMCS-2022), 12–14 October 2022. Organized by the DIT University, Uttarakhand, India.