A NOTE ON ANALYTICAL SOLUTIONS OF ONE OF THE SPECIAL FRACTIONAL INTEGRO-DIFFERENTIAL EQUATION

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ABSTRACT

This work utilizes the modified $G^{'}$-expansion approach to provide analytical solutions for the nonlinear fractional integro-differential Kadomtsev-Petviashvili (KP) hierarchy equation with conformable time-fractional derivative. The modified $G^{'}$-expansion technique is a useful and significant approach for finding analytical solutions to nonlinear equations. With the proposed method, there are three unique types of solutions such as hyperbolic, trigonometric and rational solutions. These solutions have been found with the help of software program.

***K*eywords** KP Hierarchy equation · Conformable derivative · Modified $G^{'}$-expansion method

References

[1] Gepreel, Khaled A. "Exact solutions for nonlinear integral member of Kadomtsev–Petviashvili hierarchy differential equations using the modified (w/g)-expansion method." Computers & Mathematics with Applications 72.9 (2016): 2072-2083.

[2] Özkan, Erdoğan Mehmet, and Ayten Özkan. "On exact solutions of some important nonlinear conformable time-fractional differential equations." SeMA Journal 80.2 (2023): 303-318.

[3] Zayed, Elsayed ME, and Ahmed H. Arnous. "The modified wg-expansion method and its applications for solving the modified generalized Vakhnenko equation." Italian Journal of Pure and Applied Mathematics 32 (2014): 477-492.

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