Analytical Approximate Solution of Space-Time Fractional Diffusion Equation with a Moving Boundary Condition

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The homotopy perturbation method is used to find an approximate analytic solution of the problem involving a space-time fractional diffusion equation with a moving boundary. This mathematical technique is used to solve the problem which performs extremely well in terms of efficiency and simplicity. Numerical solutions of the problem reveal that only a few iterations are needed to obtain accurate approximate analytical solutions. The results obtained are presented graphically.

Key words: Fractional Diffusion Equation; Moving Boundary Problem; Fractional Solute Release; Error Function; Homotopy Perturbation Method.