

NUMERICAL SOLUTION OF ONE NONLINEAR PARTIAL DIFFERENTIAL THREE-DIMENSIONAL SYSTEM

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A three-dimensional analogue of one non-linear two-dimensional system of partial differential equations describing some biological processes is studied [1]. The averaged model of sum approximation [2] and the variable direction difference scheme [3] for an initial-boundary problem are considered. Various numerical experiments have been conducted and a comparative analysis of the obtained results is given.

References

1. Mitchison, G.J. The polar transport of auxin and vein patterns in plants. *Philos. Trans. R. Soc. Lond. B Biol. Sci.*, 295 (1981), 461-471.
2. Dzhangveladze, T.A. Averaged model of sum approximation for a system of nonlinear partial differential equations. *Proc. I. Vekua Inst. Appl. Math.*, 19 (1987), 60-73 (Russian).
3. Jangveladze, T., Kiguradze, Z., Gagoshidze, M., Nikolishvili, M. Stability and convergence of the variable directions difference scheme for one nonlinear two dimensional model. *International Journal of Biomathematics*. 8. 5 (2015), 1550057 (21 pages), DOI: 10.1142/S1793524515500576.