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QUALITATIVE PROPERTIES OF SOLUTION OF CROSS-DIFFUSION MODEL OF KOLMOGOROV-FISHER TYPE BIOLOGICAL POPULATION TASK

D. K. MUHAMEDIYEVA

Junior Researcher, Centre for the Development of Software and Hardwre-Program Complexes,

Tashkent, Uzbekistan

ABSTRACT

In present work explores the issues of global solvability of the biological population task of Kolmogorov-Fisher type and qualitative properties of the solution of task on the basis of self-similar analysis. Considered a parabolic system of two quasilinear equations of reaction-diffusion. Suggested suitable initial approximation for fast convergence iterative process. Carried out numerical experiments with visualization for different values of system parameters. Modeling of growth processes of dissipative structures in reaction-diffusion (RD) systems contributes to the development of theoretical ideas about colonial organization of populations.

KEYWORDS: Cross-Diffusion, Biological Population, Parabolic System of Quasilinear Equations, Initial Approximation, Numerical Solution of the Iterative Process, Self-Similar Solutions