

Travelling wave solution for the non-linear age-structured model of polycyclic population dynamics

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ABSTRACT

One was considered non-linear age-structured model of population dynamics based on the initial-boundary value problem for the non-linear hyperbolic equation with integral boundary condition. This model describes the evolutionary dynamics of polycyclic population with non-linear species death rate. Latest controls the feedback influence of population growth on the increasing of mortality process in population. The explicit solution of this problem was obtained by the method of characteristic and common solution of nonlinear J.Bernoulli's equation. Exact solution enabled us to create an accurate numerical algorithm and carry out the numerical simulation of different scenarios of polycyclic population dynamics [1, 2].

References

- [1] Akimenko V.V., Zahorodnii Yu.V (2014) *Analytical and numerical solutions for the age-structured cells aggregation dynamics model.*, Cybernetics and Systems Analysis, Volume 50 (4) , pp. 578–593.
- [2] Akimenko V.V., Zahorodnii Yu.V., Boyko A.L. (2013) *Identification of parameters of evolutionary model of monocyclic cells aggregation with the hop plants example*, Computers and mathematics with application, Volume 66, pp. 1547–1553.