

# Calculating Equilibrium and Quasi-stationary States for Non-Linear Model of Evolutionary Dynamics of Monocyclic Cell Population

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We develop the numerical method and perform numerical experiments for the initial-boundary value problem for the system of semi-linear transport equations which describes the evolutionary dynamics of age-structured monocyclic cell population. We have considered the academical test on the parameterized set of algebraic function for incoming in model parameters. Numerical calculations indicated that there are just two types of evolutionary dynamics in age-structured monocyclic cell population model. In the case of first type named as equilibrium state the maximum value of population density attracts to the initial value after small oscillation in the neighborhood of initial point. Second type named as quasi-stationary state is characterized by increasing (decreasing) of maximum value of population density in time from initial value to the constant value which is higher (lower) than initial one. We indicate also that for some values of incoming parameters the increasing quasi-stationary state may be characterized by tremendous growth of population density. Obtained theoretical results may be used for study such population dynamics processes as behavior of microorganism population in the cases of asymptomatic or healthy carriers and infection generalization process in living organisms.

## References

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