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On the nonlocal discretization of the simplified Anderson–May model of viral infection

We present five nonstandard finite difference methods designed for numerical simulation of the simplified Anderson–May model of viral infection. The proposed methods, based solely on the principle of nonlocal discretization, are able to preserve all of the essential qualitative features of the original model: the non-negativity of the solution and local stability of the equilibrium points, along with their stability conditions. One of the proposed methods preserves the types of the equilibrium points (i.e. the presence and absence of oscillations) as well. All of these results are independent of the chosen step-size of simulation.

References

[1] A. Korpusik, M. Bodnar, *On the nonlocal discretization of the simplified Anderson–May model of viral infection*, Mathematica Applicanda 46(1) (2018), 109–116, doi=10.14708/ma.v46i1.6395.