A Numerical Solution to a Nonlinear McKendrick-Von Foerster Equation with Diffusion

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ABSTRACT

An implicit finite difference scheme is presented to approximate the solution to the McKendrick-Von Foerster equation with diffusion (M-V-D). The notion of upper solution is introduced and used effectively with aid of discrete maximum principle to study the well-posedness and stability of the numerical scheme. A relation between the numerical solutions to the M-V-D and the steady state problem is established.

Keywords: Finite difference equation; non-local boundary condition; Iterative method; Asymptotic analysis.

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