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Periodic solutions, oscillation and attractivity of nonlinear delay discrete survival red blood cells model

In this paper, we will consider the discrete nonlinear delay survival red blood cells model

$$x(n+1)-x(n)=-(n)x(n)+p(n)\exp\bigl(-q(n)x^{m}(n-)\bigr),\quad n=1,2,\dots,$$

where (n), $p(n)$ and $q(n)$ are positive sequences of period and m is a positive constant. By using the continuation theorem in conincidence degree theory as well as some priori estimates we prove that the equation has a positive periodic solution $x(n)$. We prove that the solutions are permanence and establish some sufficent conditions for the prevalence of the survival cells around the periodic solution which are oscillation criteria of the positive solutions about $x(n)$. Also, we give an estimation of the lower and uper bounds of the osillatory solution and establishe some sufficient conditions for for the nonexistence of dynamical diseases on the population which are the global attractivity results of $x(n)$.