1163-92-717 **Mustafa Kulenovic***, 165 little rest road, Unversity of Rhode Island, Kingston, RI 02881.
Asymptotic Behavior of a Discrete-Time Density-Dependent SI Epidemic Model With Constant Recruitment.

We use the epidemic threshold parameter, $\Re_0$, and invariant rectangles to investigate the global asymptotic behavior of solutions of the density-dependent discrete-time SI epidemic model

$$\begin{cases} S_{n+1} = aS_n e^{-I_n} + B \\ I_{n+1} = aS_n \left(1 - e^{-I_n}\right) + bI_n \end{cases} \quad n = 0, 1, 2, \ldots$$

where the parameters a, b and B and the initial conditions S_0 and I_0 satisfy

$$a \in (0, 1)\,,\ b \in [0, 1)\,,\ B \in (0, \infty)\,, \quad S_0 \geq 0, \quad I_0 \geq 0.$$

The variables S_n and I_n represent the populations of susceptibles and infectives at the n-th generation, respectively. The constant survival "probabilities" of susceptible and infective individuals are a and b, respectively. B is the constant recruitment per generation into the susceptible class. We compute the basic reproductive number, $\Re_0$, and use it to predict the local persistence or extinction of the infective population. (Received September 11, 2020)