

## Stability Analysis of a Human-Mosquito Model of Malaria with Infective Immigrants

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**Abstract :** In this paper, we analyse the stability of the SEIR model of malaria with infective immigrants which was recently formulated by the authors. The model consists of an SEIR model for the human population and SI Model for the mosquitoes. Susceptible humans become infected after they are bitten by infectious mosquitoes and move on to the Exposed, Infected and Recovered classes respectively. The susceptible mosquito becomes infected after biting an infected person and remains infected till death. We calculate the reproduction number  $R_0$  using the next generation method and then discuss about the stability of the equilibrium points. We use the Lyapunov function to show the global stability of the equilibrium points.

**Keywords :** equilibrium points, exposed, global stability, infective immigrants, Lyapunov function, recovered, reproduction number, susceptible

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