An stochastic HIV Epidemic Model Driven with fBM Death Uncertainty

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Abstract

Keywords: fBM, stochastic differential equation.

1. Introduction

2. Model formulation

Here we consider the model reported in [5] as block base to design our stochastic model. The deterministic dynamics obeys the following equation:

$$\begin{aligned}
\frac{dS}{dt} &= \mu K - c\beta(I + bJ)S - \mu S,\\
\frac{dI}{dt} &= c\beta(I + bJ)S - (\mu + k_1)I + \alpha J,\\
\frac{dJ}{dt} &= k_1 I - (\mu + k_2 + \alpha)J,\\
\frac{dA}{dt} &= k_2 J - (\mu + d)A.
\end{aligned} \tag{1}$$

3. Hurst parameter estimation

4. Existence of a unique positive invariant solution

5. Numerical results

6. Discussion

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