

An SIRS Stochastic Model with Warning Signals

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Epidemiological models have been proposed to study the spread of computer viruses. To deal this subject, there exists a mathematical approach based on deterministic models defined in terms of differential equations. Other mathematical approach is based on stochastic models that employ Markov chains, branching and diffusion processes,... The model proposed here belongs to this last approach. It is a stochastic susceptible-infected-removed-susceptible (*SIRS*) model, where immune computers send warning signals to reduce the propagation of the virus among the rest of computers in the population. An analysis of the quasi-stationary distribution, the number of infections, the extinction time and the hazard time is performed for this model. Eventually, some numerical results for these characteristics are presented.

References

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