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Stationary distribution and extinction of a stochastic HIV-1 model with Beddington–DeAngelis infection rate

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***Highlights (for review)**

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- A stochastic HIV-1 model with Beddington-DeAngelis infection rate is studied.
- We establish sufficient conditions for the existence of a unique ergodic stationary distribution.
- We obtain sufficient conditions for extinction of the disease.
- The existence of a stationary distribution implies stochastic weak stability.

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