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A fast algorithm for the spread of HIV in a system of prisons

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Abstract

In this paper, we propose a continuous time model for modelling the spread of HIV in a network of prisons. We give some sufficient conditions for the equilibrium points of the system to be stable. We also develop an efficient algorithm based on Newton's method and the Sherman–Morrison–Woodbury formula for computing the equilibrium values of the infectives in each prison.



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Keywords

HIV; Prison system; Epidemic model; Equilibrium point; Newton's method; Sherman–Morrison–Woodbury formula

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