ON A MODEL FOR EPIDEMIC SPREAD WITH INTERPOPULATION CONTACT AND REPELLENT TAXIS

Dedicated to Messoud Efendiev on the occasion of his 65th birthday

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Abstract.
We study a PDE model for dynamics of susceptible-infected interactions. The dispersal of susceptibles is via diffusion and repellent taxis as they move away from the increasing density of infected. The diffusion of infected is a nonlinear, possibly degenerating term in nondivergence form. We prove the existence of so-called weak-strong solutions in 1D for a positive susceptible initial population. For dimension $N \geq 2$ and nonnegative susceptible initial density we show the existence of supersolutions. Numerical simulations are performed for different scenarios and illustrate the space-time behaviour of solutions.

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