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Numerical treatment of a SIS model with repulsive taxis

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SUMMARY

We treat numerically a SIS epidemic model with repulsive infected-taxis (introduced in [4]) that describes the dynamics of a population where susceptible people v want to stay away from infective one u. A finite element fully discrete scheme with nonlinear discrete diffusion is proposed. Properties as well-posedness, conservation of the total mass, point-wise and uniform estimates for u, positivity for u and approximated positivity for v are preserved. The obtention of a singular functional associated to the infected population (see [1, 3]) is the key point to obtain the approximated positivity property and to avoid the appearance of spurious oscillations. The talk is based on [2].

Keywords: Diffusive SIS epidemic model, repulsive infected-taxis, finite element approximation

AMS Classification: 35Q92, 35K57, 92D30, 65M60

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