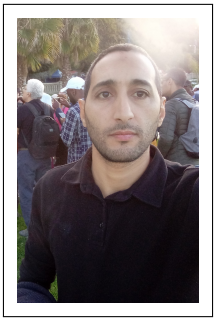
MATHEMATICS AND COMPUTER SCIENCE SEMINARY
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Discussion on a slow-fast age-structured SIS model with a general treatment function



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Abstract

We consider a slow-fast system that arises from combining a demographic model and a basic SIS model with a general treatment function. We apply Tikhonov's theorem to reduce the perturbed model to planar systems that approximate its slow phases. Approximation results are given on bounded, arbitrarily large and unbounded time intervals. In this presentation, we examine an example of a function that combines a natural recovery rate with a homographic treatment function that takes into account the limits of hospital capacity. We interpret some numerical simulations to highlight our results. We also discuss the effect of parameters of the treatment function on the spread of the disease and on the population.

Mathematics Subject Classification : 34E15, 92D30.

Keywords and phrases: Epidemiological models; Demographic model; Singular perturbations; Tikhonov's theorem; Treatment function.

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