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Optimal latent period in a bacteriophage model structured by infection age

Bacteriophage viruses ("bacteria-eater") are a yet promising, largely forgotten, weapon in the fight against antibiotic-resistant bacterial infections, for instance in biocontrol of farm chicken salmonellosis. We present and analyze a model of phage-bacteria population dynamics taking into account the distribution of infected bacteria with respect to the age of infection and assuming a random latent period (lysis timing) with a given probability distribution. We focus on the computation of the optimal latent period, optimal in the sense of maximizing the growth rate of the phages, which is an important issue for the laboratory experiments.

This is a joint work with À. Calsina from Departament de Matemàtiques, Universitat Autònoma de Barcelona, and J.M. Palmada from Departament d'Informàtica i Matemàtica Aplicada, Universitat de Girona.