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Wentzell semigroups in biology

In this talk we are going to introduce linear and nonlinear physiologically structured population models with diffusion in the size-space. We equip our model with Wentzell boundary conditions which can be recast as dynamic conditions on the boundary. We apply our model for a population in which individuals are structured with respect to a pathogen load which represents the continuous structuring variable. Then the compartment of uninfected individuals carries mass. For a much earlier attempt see: Waldstaetter et al. in SIAM JMA (1988). We will discuss existence and positivity of solutions and qualitative questions: such as existence of steady states and asymptotic behaviour of solutions. We will be working in the framework of the theory of strongly continuous semigroups and utilising some earlier results, see e.g. Favini et al. in J. Evol. Eq. (2002).