

# Modeling chemostats under random and stochastic perturbations

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## Abstract

In this talk we will discuss two different ways to model a chemostat subjected to random and stochastic perturbations. The main tool to handle the problem is the theory of random dynamical systems and we will show that when we consider unbounded stochastic perturbations in some of the parameters of the deterministic model, the problem may become ill-posed since the stochastic version does not preserve positivity of solutions, unlike what may happen if we perturb with bounded noise. In this case the positivity of solutions can be guaranteed and one can establish sufficient conditions ensuring extinction and persistence results for the model.

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