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Mean-Field Models in Biology and Engineering

Abstract

I will review different aspects of applications of mean-field models arising in science, technology and life sciences. I will concentrate in 3 models in mathematical biology where these aspects are important in order to produce macroscopic models keeping the right qualitative behavior. We will focus on swarming models, probabilistic models in computational neuroscience and pattern formation in zebra fish lateral lines. Finally, a model of consensus will be adapted as an algorithm for global optimisation.