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BOUNDARY LAYER ANALYSIS FOR THE STOCHASTIC NONLINEAR REACTION-DIFFUSION EQUATIONS

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Dedicated to Edriss Titi on the occasion of his sixtieth birthday

Abstract. Singularly perturbed stochastic (and deterministic) nonlinear reaction-diffusion equations are considered. We first study the governing problem posed in the channel domain with lateral periodicity and extend the results to general smooth domains. Introducing corrector functions, which correct the boundary values discrepancies, we are able to develop the convergence analysis. For the analysis, we make use of the maximum principle to estimate the corrector functions. The stochastic problems also rely on the deterministic corrector functions, which lead to simpler computations than those of the stochastic version of the correctors.

Contents

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