

Fast reaction limit with nonmonotone reaction function

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We consider a mass-conserving reaction-diffusion system with nonmonotone reaction function F and one non-diffusing component. As the speed of reaction tends to infinity, the concentration of the non-diffusing component exhibits fast oscillations. We identify precisely its Young measure which, as a by-product, proves strong convergence of the diffusing component, a result that is not obvious at all from a priori estimates. Our work is based on the analysis of regularization for forward-backward parabolic equations by Plotnikov. We also refine the method of Plotnikov by application of classical Radon-Nikodym theorem. The talk is based on two papers arXiv:2008.11086 (joint with B. Perthame) and arXiv:2105.11218.