

# Global existence of renormalized solutions to entropy-dissipating reaction-diffusion systems

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Consider a single reversible chemical reaction with mass-action kinetics. The corresponding reaction-diffusion equation then formally satisfies an entropy inequality. Nevertheless, in general global existence of solutions for the reaction-diffusion equation has remained an open problem due to the possibly steep growth of the reaction terms. We propose a notion of renormalized solutions for such equations and succeed in proving global existence of solutions for general initial data and coefficients. Our notion of renormalized solutions reduces to the usual notion of weak solutions if the reaction terms are integrable.