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Aging processes in reversible reaction-diffusion systems[1] NASRIN AFZAL, Virginia Tech, JUSTIN WAUGH, University of Colorado Boulder, MICHEL PLEIMLING, Virginia Tech — Reaction-diffusion systems with reversible reactions generically display power-law relaxation toward chemical equilibrium. In this work we investigate, through numerical simulations, aging processes that characterize the non-equilibrium relaxation. Studying a model which excludes multiple occupancy of a site, we find that the scaling behaviors of the two-time correlation and response functions are similar to that discovered previously in an exactly solvable version with no restrictions on the occupation numbers. In particular, we find that the scaling of the response depends on whether the perturbation conserves a certain quantity or not. Our results point to a high degree of universality in relaxation processes taking place in diffusion-limited systems with reversible reactions.

[1] N. Afzal, J. Waugh, and M. Pleimling, J. Stat. Mech. P06006 (2011).

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