Universality in reaction-diffusion fronts

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We have studied front dynamics for the discrete $A + A \to A$ reaction-diffusion system, which in the continuum is described by the (stochastic) Fisher-Kolmogorov equation. We have revisited this discrete model in two space dimensions by means of extensive numerical simulations and an improved analysis of the time evolution of the interface separating the stable and unstable phases. In particular, we have measured the full set of critical exponents which characterize the spatio-temporal fluctuations of such front for different lattice sizes, focusing mainly in the front width and in the correlation length. These exponents are in very good agreement with those computed in [E. Moro, Phys. Rev. Lett. **87**, 238303 (2001)] and correspond to those of the Kardar-Parisi-Zhang (KPZ) universality class for one-dimensional interfaces. Furthermore, we have studied the statistics of rescaled front fluctuations and the covariance of the correlation function, which had remained thus far unexplored in the literature and allows for a further stringent test of KPZ universality.