

Erratum: Dynamics of driven interfaces near isotropic percolation transition [Phys. Rev. E 58, 1514 (1998)]

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In our paper we studied the dynamics of driven interfaces near an isotropic percolation transition. We have found an error in our code that calculated the local width of the interface $w(\ell, t)$. Because of this the original reference [18] in our paper is incorrect. The new results are presented below.

Following Krug [1] we have calculated the first four moments of the average nearest-neighbor height differences $\sigma_q(t) = \langle |h(x+1, t) - h(x, t)|^q \rangle^{1/q}$. Close to the threshold, all of the moments should scale with the lateral correlation length as $\sigma_q \sim \xi^{\alpha_q} \sim t^{\alpha_q/z^*} \sim t^{\beta_q}$ [1–3]. The results of new computer simulations are shown in Fig. 1. The exponents are $\beta_1 \approx 0.13(2)$, $\beta_2 \approx 0.39(2)$, $\beta_3 \approx 0.52(2)$, and $\beta_4 \approx 0.63(2)$ [4]. These results are in accordance with the *spatial* multiscaling we reported, and imply anomalous scaling [3] contrary to what we stated in the original reference [18]. This can be stated explicitly through the scaling of the correlation function [1–3]

$$G^q(r, t) \equiv \langle |h(x+r, t) - h(x, t)|^q \rangle = \xi^{q\alpha_q} r^{q\chi_q} f_q(r/\xi), \quad (1)$$

where the scaling function $f_q(u \rightarrow 0) = \text{const}$ and $f_q(u \rightarrow \infty) \sim u^{-q\chi_q}$. At the limit $r \approx \xi \approx L$ this implies $\chi_q + \alpha_q = \chi_q^*$, where χ_q^* and χ_q denote the global and local roughness exponents, respectively [3]. Indeed, using β_2 and β_4 as obtained above, and $\chi_2 = 0.54(5)$, $\chi_4 = 0.29(3)$ from our paper with $z^* = 1.13$, we obtain $\chi_2^* \approx 0.98$ and $\chi_4^* \approx 1.00$ in excellent agreement with our prediction that $\chi_q^* = 1$ for all q .

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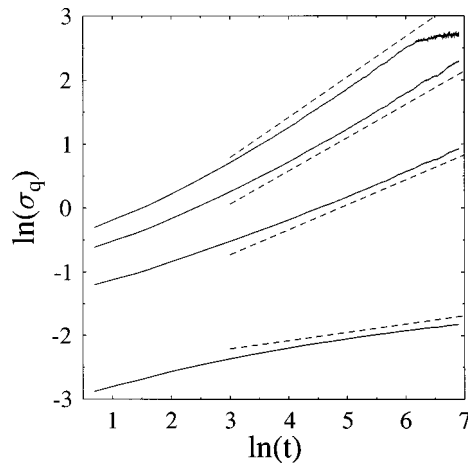


FIG. 1. The first four moments of $\sigma_q(t) \sim t^{\beta_q}$ ($q=1-4$ from bottom to top) as a function of time for the nearest-neighbor isotropic percolation model at the reactant concentration $c=0.59275$. The lateral system size was $L=20\,000$ and the data were averaged over 200 samples. The dashed lines denote the exponents given in the text.

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[2] M. Schroeder, M. Siegert, D. E. Wolf, J. D. Shore, and M. Plischke, Europhys. Lett. **24**, 563 (1993); S. Das Sarma, S. V. Ghaisas, and J. M. Kim, Phys. Rev. E **49**, 122 (1994).

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[4] We also checked that the local widths give the same results for $q=2$ and 4.