

Abstract Submitted
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Survival Probability in the Fluctuations of Interacting Steps¹

HAILU GEBREMARIAM, U. of Maryland, College Park (UM), C. DASGUPTA, Indian Inst. of Science–Bangalore & UM, T.L. EINSTEIN, UM — We have performed Monte Carlo studies of survival probabilities $S(t)$ and autocorrelation functions $C(t)$ [1] of interacting steps on vicinal surfaces within the terrace-step-kink (TSK) model. Using Langevin formalism, the analytical and numerical investigations in [1] assumed a step fluctuates in a harmonic confining potential, reminiscent of the Gruber-Mullins model. However, the interaction between steps separated by ℓ has the form A/ℓ^2 . Adapting the program written to study distribution of ℓ [2], we investigate how A/ℓ^2 repulsions alter the relation between long-time behaviors of $S(t)$ and $C(t)$ established in [1]. The ratio of their respective characteristic times decreases as A increases. We also investigate the scaling behavior of $S(t)$ vs. system size and sampling time.

[1] C. Dasgupta, M. Constantin, S. Das Sarma, and Satya N. Majumdar, Phys. Rev. E **69**, 022101 (2004).

[2] Hailu Gebremariam, S. D. Cohen, H. L. Richards, and T. L. Einstein, Phys. Rev. B **69**, 125404 (2004).

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Theodore Einstein
University of Maryland

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