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Distribution of Steps with Finite-Range Interactions: Analytic Approximations and Numerical Results DIEGO LUIS GONZÁLEZ, Univ. del Valle, Cali, Colombia, DIEGO FELIPE JARAMILLO, GABRIEL TÉLLEZ, Univ. de Los Andes, Bogotá, Colombia, T.L. EINSTEIN[1], Physics and CMTC, Univ. Maryland, College Park — While most Monte Carlo simulations assume only nearest-neighbor steps interact elastically, most analytic frameworks (especially the generalized Wigner distribution) posit that each step elastically repels all others. In addition to the elastic repulsions, we allow for possible surface-state-mediated interactions. We investigate analytically and numerically how next-nearest neighbor (NNN) interactions and, more generally, interactions out to q'th nearest neighbor alter the form of the terrace-width distribution and of pair correlation functions (i.e. the sum over n'th neighbor distribution functions, which we investigated recently.[2] For physically plausible interactions, we find modest changes when NNN interactions are included and generally negligible changes when more distant interactions are allowed. We discuss methods for extracting from simulated experimental data the characteristic scale-setting terms in assumed potential forms.

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[2]D.L. González, A. Pimpinelli, & TLE, Phys. Rev. E 88, 011151 (2012)

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