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Step Evolution Toward Equilibrium: Fokker-Planck Approach¹ AJMI BEN HAMOUDA, ALBERTO PIMPINELLI, LASMEA, U. Blaise Pascal Clermont-2, France, HAILU GEBREMARIAM, T. L. EINSTEIN, U. of Maryland, College Park — We have derived a Fokker-Planck equation (FPE) that describes the relaxation of steps on vicinal surfaces toward the generalized Wigner surmise $P_{\varrho}(s) = as^{\varrho} \exp(-bs^2)$, arguably the best (both conceptually and quantitatively) description of the equilibrium terrace-width distribution (TWD) of steps on a vicinal surface.² Focusing on the variance of the terrace-width distribution, we consider several physically-relevant initial states: perfect cleavage (straight, uniformly spaced), step bunch, and equilibrated distributions at different temperatures (prior to quenching), as well as other models. We compare analytic results with Monte Carlo studies, Metropolis and kinetic. We discuss the crucial question of how to make connections between the FPE time scale in analytic results and the actual time scale in simulations of models and in measurements of physical systems.

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 $^2\mathrm{A}.$ Pimpinelli, Hailu Gebre
mariam, & T.L. Einstein, Phys. Rev. Lett. 95, xxx (2005)

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