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Terrace Width Distributions in the Limit $\tilde{\beta}_B/\tilde{\beta}_A \to \infty$: Numerical Transfer Matrix Results HOWARD RICHARDS, Marshall University — With a few physical and mathematical simplifications, the Terrace Width Distributions (TWDs) for a stepped crystal surface with typical step interactions have been shown to be Generalized Wigner Distributions (GWDs).[1] This is true even when steps have different stiffnesses ($\tilde{\beta}_A$ and $\tilde{\beta}_B$) that alternate, as has been confirmed by Monte Carlo simulations.[2] Monte Carlo simulations have three serious drawbacks for studying very unequal stiffnesses: (1) the simulated steps have only finite length, which may be close to or smaller than the correlation length; (2) the time required to equilibrate may be prohibitively long; and (3) statistical uncertainties are unavoidable. Additionally, the simulations in Ref. 2 were problematic, since $\tilde{\beta}_A$ approached zero as $\tilde{\beta}_B$ became large. This work avoids all those problems by finding TWDs from numerical transfer matrices with $\tilde{\beta}_A$ held constant as $\tilde{\beta}_B \to \infty$. This is a necessary step before the GWD can be analyzed as an ensemble average of Gruber-Mullins TWDs.

[1]H. L. Richards and T. L.Einstein, *Phys. Rev. E* **76**, 016124 (2005).
[2]J. A. Yancey, H. L. Richards, and T. L.Einstein, *Surf. Sci.* **598**, 78–87 (2005).

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