Characterizing Submonolayer Growth of 6P on Mica: Capture Zone Distributions vs. Growth Exponents and the Role of Hot Precursors[1] T.L. EINSTEIN, JOSUE MORALES-CIFUENTES, Univ of Maryland-College Park, ALBERTO PIMPINELLI, Rice Quantum Institute — Analyzing capture-zone distributions (CZD) using the generalized Wigner distribution (GWD) has proved a powerful way to access the critical nucleus size i.[2] Of the several systems to which the GWD has been applied, we consider 6P on mica, for which Winkler's group found $i \approx 3$. Subsequently they measured the growth exponent α (island density $\propto F^\alpha$, for flux F) of this system and found good scaling but different values at small and large F, which they attributed to DLA and ALA dynamics, but with larger values of i than found from the CZD analysis. We investigate this result in some detail. The third talk of this group describes a new universal relation between α and the characteristic exponent β of the GWD. The second talk reports the results of a proposed model that takes long-known transient ballistic adsorption into account, for the first time in a quantitative way.[3] We find several intermediate scaling regimes, with distinctive values of α and an effective activation energy. One of these, rather than ALA, gives the best fit of the experimental data and a value of i consistent with the CZD analysis.

Theodore Einstein
Univ of Maryland-College Park

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