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The effects of initial seed size and transients on dendritic crystal growth ANDREW DOUGHERTY, THOMAS NUNNALLY, Dept. of Physics, Lafayette College — The transient behavior of growing dendritic crystals can be quite complex, as a growing tip interacts with a sidebranch structure set up under an earlier set of conditions. In this work, we report on two observations of transient growth of NH_4Cl dendrites in aqueous solution. First, we study growth from initial nearly-spherical seeds. We have developed a technique to initiate growth from a well-characterized initial seed. We find that the approach to steady state is similar for both large and small seeds, in contrast to the simulation findings of Steinbach, Diepers, and Beckermann[1]. Second, we study the growth of a dendrite subject to rapid changes in temperature. We vary the dimensionless supersaturation Δ and monitor the tip speed v and curvature ρ. During the transient, the tip shape is noticeably distorted from the steady-state shape, and there is considerable uncertainty in the determination of the curvature of that distorted shape. Nevertheless, it appears that the "selection parameter" $\sigma^* = 2d_0D/v\rho^2$ remains approximately constant throughout the transient. [1] I. Steinbach, H.-J. Diepers, and C. Beckermann, *J. Cryst. Growth*, **275**, 624-638 (2005).

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