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**Paolo Cermelli, Michel E. Jabbour** and **Nicholas O. Kirby\*** (nkirby@ms.uky.edu). *Step collisions during nanowire growth: the BCF model and beyond*. Preliminary report.

In this talk I will compare a model of epitaxial growth due to Burton, Cabrera, and Frank and a thermodynamically consistent extension. Both are formulated as free-boundary problems, in which the motion of a step is governed by the adatom density or chemical potential defined on the adjacent terraces. I will consider the quasistatic version of each model applied to two concentric circular steps bounded by a wall to derive qualitative conditions under which step collision occurs. This choice of geometry models crystal growth on a nanowire. Surprisingly, we find that the normal Schwoebel–Ehrlich (nSE) effect is destabilizing for the given geometry and boundary conditions, in contrast to the standard understanding of how the nSE barrier affects the stability of step flow. (Received January 23, 2010)