

# DIFFERENTIAL GEOMETRY/PDE SEMINAR

WEDNESDAY, JANUARY 16, 2013

PADELDFORD C-36

3:50PM–5PM

Step collisions in crystal growth

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The Burton–Cabrerá–Frank model of crystal growth provides a rich arena in which analysis may be done. In it, the surface of a crystal consists of flat regions (called terraces) bounded by steps of atomic height. Growth is achieved by the deposition of atoms onto the surface, which then diffuse on the terrace until they are absorbed into a step. This, in turn, causes the step to move forward or change shape.

It is of practical interest to understand the conditions on the material parameters for which step motions are stable. One notion of stability requires that steps neither bunch nor collide. In this talk, I will introduce the full model and associated simplified models and state some recent results regarding step collisions for surfaces consisting of infinitely many parallel steps as well as steps confined between two walls. If time permits, I will discuss the corresponding results for concentric steps confined within a circular wall, which may be relevant to the growth of nano-wires.

For more information about this seminar, visit the DG/PDE Seminar Web page (from the Math Department home page, [www.math.washington.edu](http://www.math.washington.edu), follow the link **Seminars, Colloquia, and Conferences**).

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