Long-wave unstable thin film equations
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Tuesday, March 18, 2003
202 Carroll Hall, 4pm
(Refreshments at 3:15 in CAS 220D)

ABSTRACT

We consider long-wave unstable interface models of the type

\[ h_t = -(h^n h_{xxx})_x - B(h^m h_x)_x \]

where \( B, n, \) and \( m \) are constants. An interesting aspect of these equations is that there is a variety of long-time behaviors — the topic of this talk.

For example, if you’ve painted the floor, the evolution of the paint/air interface is modelled by such an equation. In this case, you know from practical experience that nothing much happens as the paint dries. On the other hand, if you paint the ceiling, not only can the paint drip down on you, but the surface can form interesting structures as it dries. The only difference between the modelling equations in these two cases is the sign of \( B \): if \( B > 0 \) then it models the painted ceiling; if \( B < 0 \) then it models the painted floor.

The talk, based on analytical and computational work, will be aimed at the non-analyst, and at undergraduate and graduate students in particular. I promise it will be more interesting than watching paint dry.

Coming later this semester: More colloquium talks, and more Akron SMAC talks. For further information, please contact Jeff Adler (adler@uakron.edu, 330-972-OPRY), or visit http://www.math.uakron.edu/~adler/seminar