# THE DEPARTMENT OF MATHEMATICAL SCIENCES

Indiana University - Purdue University Fort Wayne

is pleased to present

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## Phase Transitions for Large Domino Tilings of the Aztec Diamond

**Abstract**

The Aztec diamond is a square region in the plane that can be covered in many ways by $2 \times 1$ rectangles, called dominos. Picking one such tiling uniformly at random one observes an interesting phenomenon when the size of the Aztec diamond gets large: The pattern of dominos around each of the corners is fixed (solid phase) while the pattern is disordered in the middle (liquid phase). There is a boundary curve that gives the transition between the solid and liquid phases.

Within non-uniform models that assign different probabilities to different tilings, one may even observe a third phase (gas phase) where correlations between neighboring dominos decay at an exponential rate.

I will describe some old and new techniques that are used in the analysis of these phase transitions. The new results on the liquid-gas transition are from recent joint work with Maurice Duits (KTH Stockholm).

Noon – 1:00, Wednesday, August 23, 2017. Location: Kettler 216

`http://ipfw.edu/departments/coas/depts/math/news/seminars.html`