

Undergraduate Mathematics Colloquium

a.k.a.

Mather House Math Table

Tuesday, September 20, 2011, 5:30 P. M.

Mather Dining Rooms A & B

Zachary Abel '10

Unfolding Polyhedra is NP-Hard

Abstract: What do floors, cages, drains, pipes, wires, bricks, and towers have in common? They're all used in a fairly involved construction¹ showing that the problem of polyhedral Edge Unfolding—an important problem in Computational Origami—is computationally intractable. The Edge Unfolding problem asks whether, for a given polyhedron, it is possible to unfold the surface into a non-overlapping net in the plane while keeping the faces intact. We will explore the rich Mathematical and Computational structure underlying this problem and Computational Origami in general, and then sketch (literally!) the proof of intractability mentioned above. The only prerequisites are a love for pretty pictures (on a handout) and a tolerance for possibly not-so-pretty ones (on the blackboard).

¹ Sorry for building² up such a bad joke

² OK, maybe not *that* sorry

The undergraduate Mathematics Colloquium (a.k.a. Math Table), sponsored by the Mathematics Department, meets most Tuesdays at 5:30pm in Mather House Dining Rooms A & B. Its purpose is to expose students to diverse topics of pure and applied mathematics and to suggest potential Senior Thesis topics. Speakers include faculty, guest speakers, graduate students and undergraduate students. All students, irrespective of their mathematical backgrounds, are strongly encouraged to attend and/or give talks. The two best undergraduate talks at the Colloquium each year will win the Rogers Prize.

For more information, please contact Noam Elkies (elkies@math.harvard.edu, 5-4625).