

# PHYSICAL MATHEMATICS SEMINAR

## Geometric and topological control of kirigami

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### **ABSTRACT:**

The basic building block of any kirigami pattern is a periodic planar motif with cuts that allow the unit cell to open or close via planar rotations. The tessellations of the plane can take many forms - quads, kagome lattices, and even Islamic tilings. Recent work has explored these geometries in the context of mechanical metamaterials, and focused primarily on the forward problem - given a topology and geometry of the kirigami pattern, how does it deploy and what are the mechanical properties of the structure. In this talk, we present an inverse design framework for producing generalized kirigami tessellations that conform approximately to any prescribed target shape in two and three dimensions under deployment. We also introduce a hierarchical construction method for controlling the topology of kirigami to achieve rigidity or softness.

**TUESDAY, DECEMBER 10, 2019**

**2:30 PM – 3:30 PM**

**Building 2, Room 131**

*Reception following in Building 2, Room 290  
(Math Dept. Common Room)*

<http://math.mit.edu/seminars/pms/>