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\* UCLA Combinatorics Seminar \*  
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Date: Thursday, April 28, 1.50-2.50 in Room 5217

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**On Hard Tiling Problems**

**Abstract**

Given a set of tiles (think polyominoes) and a region, can we tile the region by copies of the tiles? In general, this decision problem is undecidable for infinite regions and NP-complete for finite regions. In the case of finite regions, the problem can be solved in polynomial time for some special set of tiles and simply connected regions using group theory; whereas the NP-completeness proofs rely heavily on the regions having lots of holes. We will show that for simply connected regions and rectangular tiles, the decision problem is still NP-complete.