Kenyon College Math Mondays

Presents...

Kakeya's Problem

Rotating needles in the plane

Professor Marie Snipes

Given a needle lying on a table, what is the smallest area in which you can turn the needle around without lifting it off the table? Clearly, you can just rotate the needle around its center, but can you do better? It was conjectured by Kakeya in the early 20th century that a 3 pointed deltoid (a non-convex shape) achieves the minimal possible area, but to everyone's astonishment, Besicovitch showed a few years later that this was spectacularly wrong: if your table is large enough, you can turn the needle around in a set of arbitrarily small area! Not only is this a surprising and fun fact to prove, but it has many interesting applications to a diverse array of problems in mathematics!

Monday, February 16

3:10 pm

RBH 311