

1116-37-2924 **Diana Davis*** (diana@math.northwestern.edu). *Negative Refraction and Tiling Billiards*.

Inner billiards is the study of a particle bouncing around inside a billiard table; outer billiards is the study of a particle reflecting through tangent lines outside the billiard table. In this talk, I'll introduce the new *tiling billiards* system, which has a trajectory refracting through a planar tiling. This system has certain similarities to both inner and outer billiards, and has very beautiful dynamics. It is motivated by a recent discovery in physics, of physical materials with negative indices of refraction. I'll discuss some results and open questions, and show some beautiful pictures. (Received September 23, 2015)