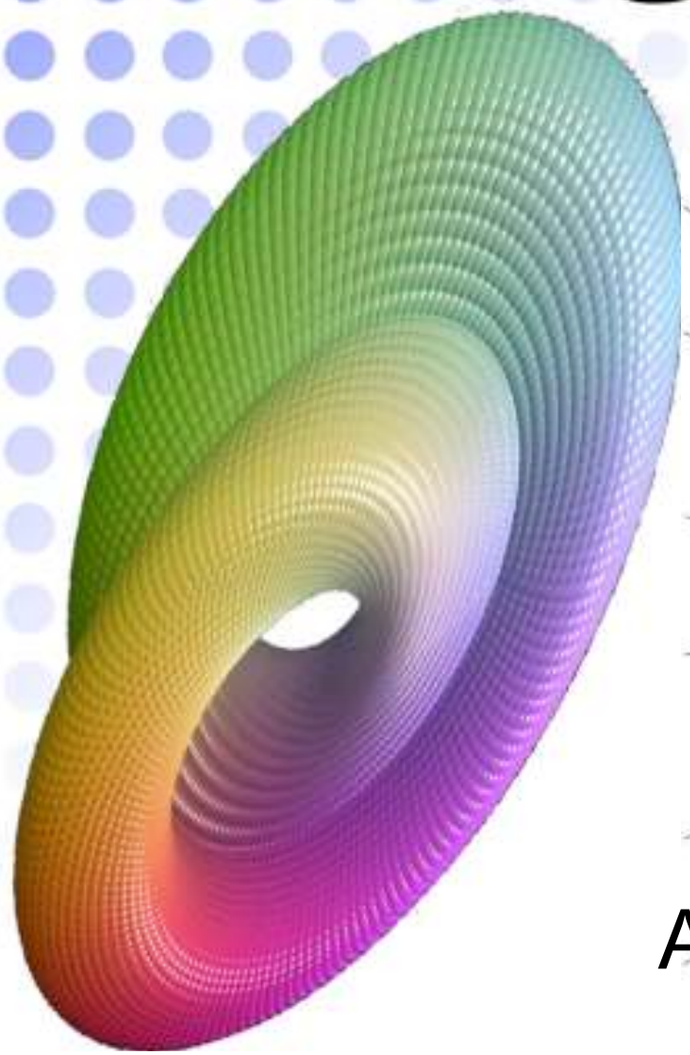
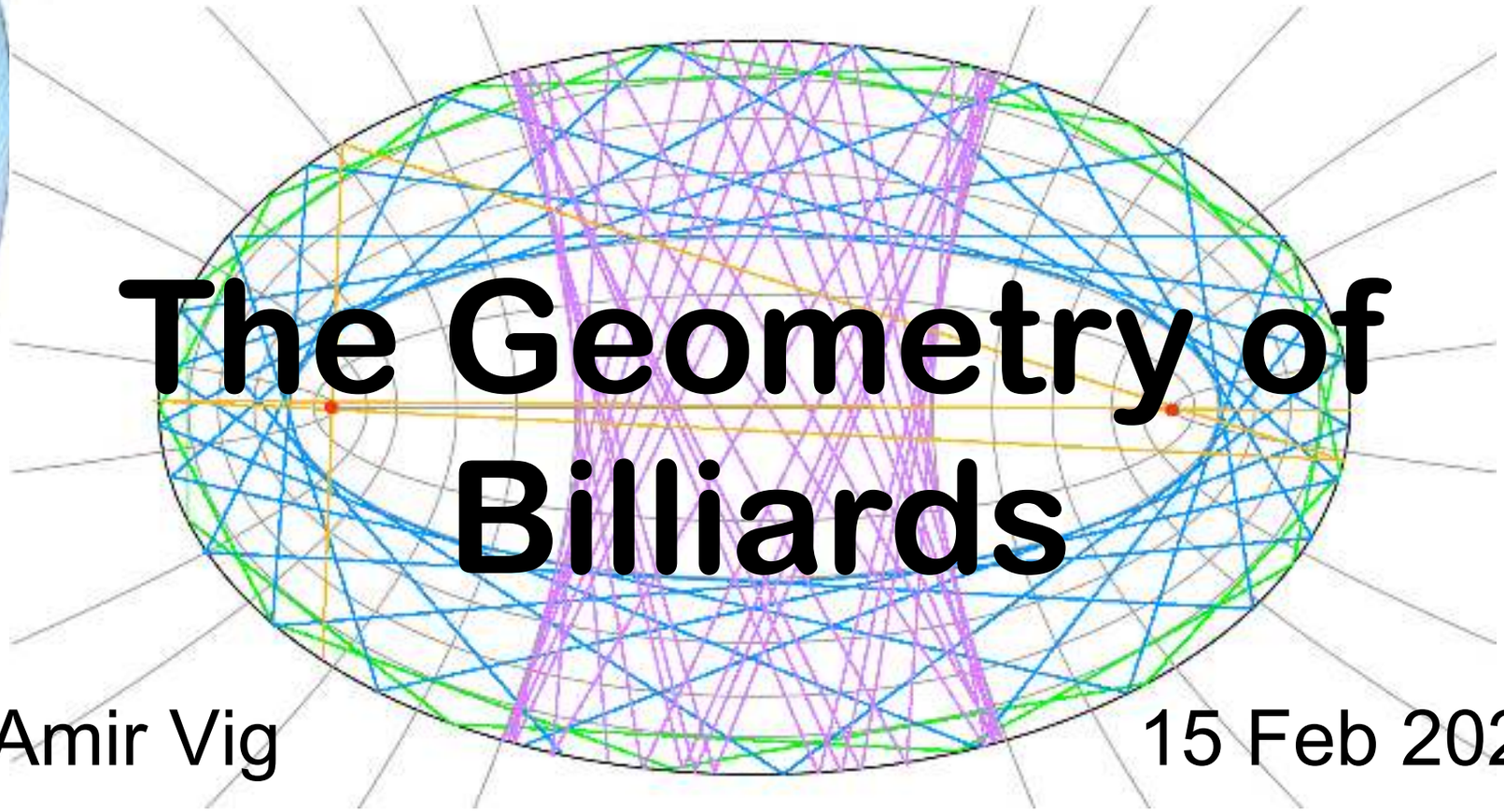
Michigan Math Club

Thursday at 4pm in EH1360
Pizza + pop outside afterwards!!





The Geometry of Billiards

Amir Vig

15 Feb 2024

What do carrom, billiards and foosball all have in common? When you launch an object towards a wall, it reflects elastically; in other words, it makes equal angles with the boundary on the way in and on the way out. Interestingly, light also follows a similar pattern (albeit much faster) when reflected by mirrors, as do waves crashing into the edge of a swimming pool. We will see how to formulate a mathematical theory of billiards and discuss some of the objects research mathematicians are most interested in: the behavior of billiard trajectories which come back to their starting point (periodic orbits) and the frequencies at which such a billiard table would vibrate if it were played as a drum.