

BI-CO MATHEMATICS COLLOQUIUM

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“Where can you put a non-orientable surface?”

Monday, November 18, 2013

Talk at 4:00 – Park 338
Tea at 3:30 – Park 355, Math Lounge

Abstract:

Non-orientable surfaces are those that are one-sided, like a Möbius band or Klein bottle. While we can build a physical model of a Möbius band in 3-dimensional space, it is a theorem from algebraic topology that one cannot find a closed (meaning without boundary) non-orientable surface embedded in 3-space. But we can take advantage of the extra elbow-room to embed such a surface in 4-dimensional space. I will first describe how one can put closed non-orientable surfaces in some more complicated 3-dimensional manifolds, but not in other ones. Then I will discuss joint work with Adam Levine and Sašo Strle on the question of whether adding an extra dimension (to make a 4-dimensional manifold) can help.

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