BI-CO MATHEMATICS COLLOQUIUM

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“Properties of Random Curves on Surfaces”

Monday, October 7, 2019

Talk at 4:00 – Park 338

Tea at 3:30 – Park 361, Math Lounge

Abstract:

Imagine a surface, like a torus or perhaps a more complicated one (such as a 2- or even n-holed torus), and imagine placing all possible closed curves that can be drawn on that surface into a hat, and picking one out at random. What properties would you expect it to have? For example: how many times would you expect it to self-cross before closing up, or what type of metric should you place on the surface to optimize the length of that curve? And mathematically speaking, what would it even mean to have such a hat? We'll talk about how one might define a "random" curve and what properties it might have. By the end of the talk, the hope is that we'll cover some beautiful connections to group theory and hyperbolic geometry (no extensive background will be assumed in either of these areas). This represents joint work with Jonah Gaster.

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