

Undergraduate Mathematics Colloquium

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**“Planning robot motion using
configuration spaces”**

Friday March 24

Talk at 4:00 in Herman Brown 227

Tea and Cookies at 3:30 in Herman Brown 438

ABSTRACT: Geometry and topology, loosely speaking, are fields of math which study shapes. Any time a question can be rephrased as “what kind of shape is this?”, these fields provide tools to get an answer. One instance of this is Einstein’s theory of general relativity – if you want to understand motion of objects under the influence of gravity, you can do so by understanding the shape of 4-dimensional ‘space-time’. We will discuss how to rephrase the following question into one about shape: “Suppose you would like to plan and execute the simultaneous motion of robots on a warehouse floor (imagine an Amazon warehouse, with robots finding, packing and shipping items). How can you do so efficiently, while making sure that the robots don’t collide?”

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