BI-CO MATHEMATICS COLLOQUIUM

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"The Space Around a Knot"

Monday, November 3, 2008

Talk at 4:15 p.m. – KINSC H109
Tea at 4:00 p.m. – KINSC H208, Math Lounge

ABSTRACT: On the wall in my parents' garage hangs a tangled extension cord with one end plugged into the other. I have tried to untangle it, without separating the two ends and breaking the circle—and had no success. Does this mean I haven't tried the right strategy, or is it theoretically impossible? Is there a procedure that can tell if an extension cord is truly knotted, or if two different cords contain the same knot?

This kind of study of knotted circles began in the 19th century with some odd notions about atoms. Since then, it blossomed into a beautiful geometric discipline whose problems have applications to both biology and physics. I will describe a way to study and compare knots by understanding the space that surrounds a knot.

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