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"Integral formulas for linking of curves"

Monday, March 12, 2012

Talk at 4:00 – Park 328

Tea at 3:30 – Park 355, Math Lounge

Abstract: In 1833, Carl Friedrich Gauss published a formula which computes the degree to which two closed curves in 3-space link each other. This linking number is given by an integral, whose integrand depends only on parametrizations of the two curves involved. The integrand also has the nice property that it doesn't change when a rigid motion is applied to the curves.

I will explain how Gauss's formula arises from a process of assigning to each pair of closed curves a certain map from the torus to the 2-sphere, and equating properties of the closed curves with properties of the associated map. I will then explain recent work which tells an analogous story for three closed curves in 3-space.

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