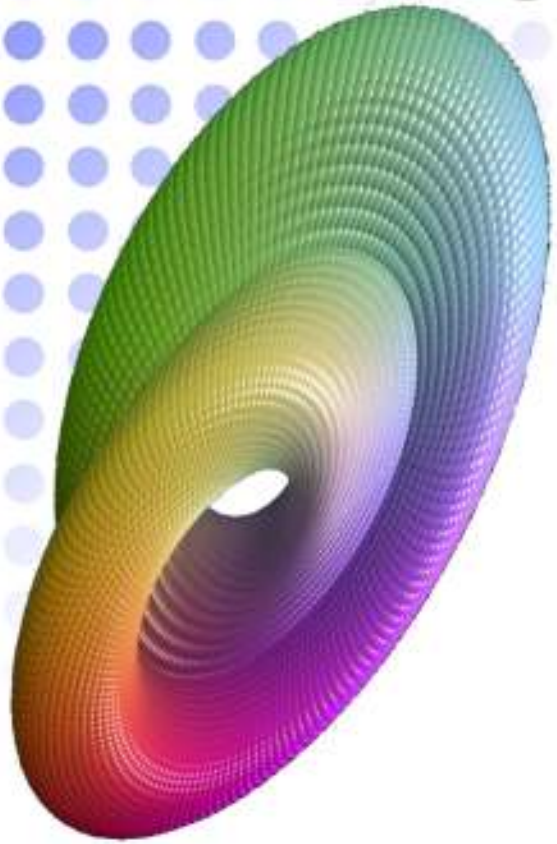
Michigan Math Club

Thursday at 4pm in the Commons

Free Pizza and Pop



Electricity, magnetism and differential geometry

Greg Muller

Abstract for 09 April 2015

In this physics-light talk, we will review how our understanding of electricity and magnetism evolved over time, and gradually incorporated more and more sophisticated ideas from differential geometry. In particular, we will review Maxwell's equations, and how they can be dramatically simplified using concepts like `differential forms' and `exterior derivatives'. Finally, we will see how this perspective naturally suggests a subtle fact about the nature of reality, which can be confirmed by the celebrated `Aharanov-Bohm experiment'. No knowledge of physics or differential forms will be assumed.