

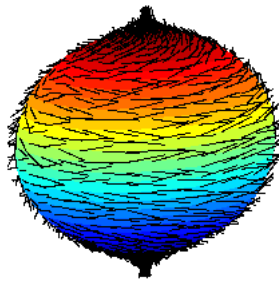
Secret Student Seminar

Experimental Algebra & Geometry Lab

The Hairy Ball Theorem and related Phenomena

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A decent attempt at combing a hairy ball.

Abstract

Suppose you are given a ball covered entirely with hairs. We're talking a seriously hairy ball; I mean hair at every point on the ball! You are given the task of combing the ball so that every hair lies flat at every point along the surface. The **Hairy Ball Theorem** tells us that S^n admits a non-zero tangent vector field if and only if the degree of n is odd. A sphere (S^2) has degree 2 in case you didn't already know. In other words, try as you may,

You cannot comb a hairy ball!

This is a direct consequence of **Brouwer's fixed-point theorem**, a result in algebraic topology concerning maps of balls onto themselves. In this talk, we will be discussing the Hairy Ball Theorem as well as related applications of Brouwer's fixed-point theorem.

Date: Friday, November 22, 2012

Time: 2:00pm–3:00pm

Place: MAGC 1.302

Pizza and soda will be served at the presentation.