Come to the LAST Club Meeting of the decade!!!

At **4:30pm**, Monday, Dec. 14th, 2009
In **B115 Van Vleck**

Speaker: Alec Johnson

Title: What is multivariable calculus good for?

Electromagnetism, fluid dynamics, plasma physics, tensor calculus...

Who Should Come: Any students interested in math, particular in the application of multivariable calculus. We especially invite **MATH 234** students, since the talk will be geared towards them! ☺

*We invite you to attend, even if you've never been to a Math Club Meeting before! Just show up this coming Monday, and listen to a great math talk while eating **FREE PIZZA!***

Abstract:

What can you do with vector calculus? One answer to this question is that the theorems of vector calculus allow you to take statements of the laws of physics and turn them into partial differential equations. For example, Gauss's divergence theorem allows you to take statements of conservation such as "the mass is conserved" and write them as partial differential equations that say how the mass density evolves over time. Stokes' circulation theorem allows you to take Faraday's observation that the circulation of the electric field around a loop is minus the rate of change of the flux of the magnetic field through the loop and turn it into an evolution equation that tells how magnetic field evolves as a function of time. I will begin by stating the divergence theorem and the circulation theorem. We will then use these theorems to derive a set of equations that constitute the basic ``laws of the universe'' according to classical physics. These laws determine the governing equations of plasma physics, and they are the starting point for relativistic generalizations.

Any Questions??? Email Tess at tcanderson2@wisc.edu or Ruth at stoehr@wisc.edu