

# BI-CO MATHEMATICS COLLOQUIUM

**Patrick Clarke**  
**University of Pennsylvania**

*“Morse Theory, Topology, and Physics”*

**Monday, December 1, 2008**

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

**Abstract:**

In 1934, Marsten Morse created what we now know as Morse Theory. It was used by Raoul Bott in his proof of the Periodicity theorem (1959), and shown to be closely tied to Supersymmetry by Edward Witten (1982).

Morse theory remains central in Topology and Theoretical Physics, and has found applications in areas such as Computer Graphics.

I will illustrate through examples what Morse Theory is, and how it can be used to understand topology. I will also discuss how it appears in my research into Cohomological Quantum Field Theories.

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