

Graduate Seminar in Mathematics

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Thursday, September 25
1:00 p.m., HH-3017

Morse theory and homology

Abstract:

Morse theory concerns the relationship between the topology of a manifold and the critical points of a differentiable function on that manifold. The theory is relatively simple to understand by appealing to geometric intuition, but also has deep and wide-ranging applications. In this lecture, I will introduce manifolds and explain how Morse theory can be used to define the Euler characteristic and homology. Time permitting I will also speak about the existence geodesic loops and/or applications to topological quantum field theory.