



Speaker: Shmuel Weinberger
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Wednesday, March 2, 2016

4:00 PM

117 Hayes-Healy Hall

Title: Anharmonic manifolds and Hilbert's 17th Problem

Abstract:

Hilbert's 17th problem is the question of whether rational functions that are non-positive are sums of squares of rational functions. This was proved by Artin and Schreier, and then more quantitative forms were studied by Pfister and Cassells (among others). In the 1950s Milnor shocked the mathematical world by showing that the 7 dimensional sphere has more than one differential structure. We shall see that his ideas lead to a connection between invariants whose universal covers have no harmonic forms on them and Hilbert's 17th problem. (This will be based on joint work with S.Cappell and J.Davis.)