Colloquium

Dr. Phil Heath,
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Friday, May 13, 2016
2:00-2:50 pm in HH-3017

Nielsen numbers of iterates and Nielsen type periodic numbers of periodic maps on tori

Abstract:

The Nielsen number $N(f)$, and the Nielsen type numbers $NP_m(f)$ and $N\Phi_m(f)$ of a self map $f : X \to X$, are f homotopy invariant lower bounds for respectively the number of fixed points of f, the number of periodic points of f period exactly m, and the number of periodic points of f of all periods dividing m. Tori are very well behaved in this regard. For example for tori these lower bounds are sharp in that the respective minimum numbers can be realized by a canonical representative of the homotopy class of f. In fact for a fixed m there are simple well known formulas for each of the numbers $N(f)$, $NP_m(f)$ and $N\Phi_m(f)$.

A map is f is said to be periodic if the nth iterate f^n is equal to the identity. This talk explores the fascinating patterns that emerge when one seeks to determine the numbers $N(f^m)$, $NP_m(f)$ and $N\Phi_m(f)$ for all m, for periodic maps on tori.