Special Day in Geometry
UC Santa Barbara

Friday, 2/17/17, South Hall 6635

10:30 – 11:30am
Christopher Connell, Indiana University, Bloomington
Title: Simplicial Volume of Affine Manifolds

Abstract: We show that a broad class of affine manifolds (including all complete affine manifolds) must have vanishing simplicial volume. This provides some further evidence for the veracity of the Auslander Conjecture. Along the way, we provide a simple cohomological criterion for aspherical manifolds with normal amenable subgroups of π_1 to have vanishing simplicial volume. This establishes a special case of a conjecture due to Lück. This is joint work with Jean-Franois Lafont and Michelle Bucher.

1:30-2:30pm
Raquel Perales, Institute of Mathematics, UNAM
Title: Gromov-Hausdorff and Intrinsic Flat Convergence

Abstract: In this talk we study sequences integral current spaces and metric spaces with boundary. We prove theorems demonstrating when the Gromov-Hausdorff and Intrinsic Flat limits of sequences of such metric spaces agree. From these theorems we derive compactness theorems for sequences of oriented Riemannian manifolds with boundary where both the GH and SWIF limits agree. For these sequences we only require nonnegative Ricci curvature, upper bounds on volume, noncollapsing conditions on the interior of the manifold and diameter controls on the level sets near the boundary.

3-4pm
Pablo Surez Serrato, National Autonomous University of Mexico
Title: Yamabe flows and extremal entropy

Abstract: We introduce curvature-normalized versions of the Yamabe flow on complete manifolds with negative scalar curvature, for which we show long time existence of solutions and convergence of these flows to complete Yamabe metrics.

We apply them to study the extrema of the topological entropy in conformal classes and offer an entropy rigidity theorem for convex-cocompact surfaces: extrema of the entropy are the metrics whose closed geodesics coincide with those of the unique hyperbolic metric conformally equivalent to the initial one. On convex-cocompact manifolds of higher dimension we show that local extrema of the entropy have constant scalar curvature on their nonwandering set.

All of this is joint work with Samuel Tapie, University of Nantes.

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