Geometry, Groups and Dynamics/GEAR Seminar
(held at the Illinois hub of GEAR)

Tuesday, March 31, 2015, 1:00 pm in 243 Altgeld Hall

Rachel Roberts (Washington University)

Approximating codimension one foliations of 3-manifolds

Abstract: Eliashberg and Thurston proved that any smooth taut co-oriented foliation of a closed, orientable 3-manifold can be approximated by a pair of contact structures, one positive and one negative. These contact structures are weakly symplectically fillable and universally tight. This result has been used both to establish the fillability of certain contact structures and to prove the nonexistence of taut foliations in certain 3-manifolds. Sometimes this has been done without consideration of the smoothness of the foliations under consideration, resulting in proof gaps. I'll discuss 3-manifolds and 2-plane fields on 3-manifolds. I'll then focus in on the statement of the Elisahberg-Thurston theorem, defining all terms, and give an overview of its proof. As time permits, I will describe how to generalize the Eliashberg-Thurston theorem to continuous foliations. This work is joint with Will Kazez.

Video