Department of Mathematics
University of Notre Dame

FELIX KLEIN SEMINAR

Guest Speaker: Diego Corro
Karlsruhe Institute of Technology, Englerstraße 2

Date: Thursday, March 29, 2018
Time: 2:00 PM
Location: 258 Hurley Hall

Lecture Title:
Manifolds with singular Riemannian foliations by aspherical leafs

Abstract

In the study of smooth group actions, effective smooth torus actions on compact smooth manifolds have played an important role. In particular they have been successfully used to obtain classification results for Riemannian manifolds with positive or non-negative sectional curvature, as well to construct metrics of positive Ricci curvature, on manifolds admitting torus actions of large dimension. Thus we may consider in the same direction, the study of singular Riemannian foliations by tori. In the setting of non-negative curvature and low dimension on simply-connected Riemannian manifolds, the presence of a singular Riemannian foliation by tori has been used to get classification results on the diffeomorphism type of such manifolds by Galaz-Garcia and Radeschi. The topic of this talk fits in this context, and in particular we will study singular Riemannian folations assuming the leaves are aspherical manifolds. This means all homotopy groups of a leaf are trivial, except the fundamental group. We will focus on foliations of low codimension, and prove the following theorem: *If (M, F) is an aspherical foliation of codimension 2 on a closed, simply-connected Riemannian manifold then the foliation is homogeneous.* To prove this result, we will study the homeomorphism and diffeomorphism type of the leaves, to be able to compare the foliation to a homogeneous one, and also we will state some conditions for the existence of a cross-section for the quotient map $M \to M/F$

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