Department of Mathematics
University of Notre Dame

GEOMETRIC ANALYSIS SEMINAR

Speaker: Renato Bettiol
Lehman College, CUNY

Date: Thursday, March 18, 2021

Time: 11:00 AM

Location: Zoom

Zoom URL: notredame.zoom.us/j/96288130964?pwd=c2dDelJJTXhSdTBVSEtLYlI1NEdzZz09

Lecture Title:
Geography of pinched 4-manifolds

Abstract

It is widely expected that a simply connected closed 4-dimensional Riemannian manifold with positive sectional curvature must be homeomorphic to the 4-sphere or the complex projective plane. Using a new take on classical techniques, we prove this to be the case if M is δ-pinched with $\delta = \frac{1}{1+3\sqrt{3}} \cong 0.161$, that is, if all sectional curvatures of M lie in the interval $[\delta, 1]$. We also give new restrictions on the "geography problem" for 4-manifolds under any (positive or negative) pinching assumption. The main tools used are convex algebro-geometric and optimization insights on sets of pinched curvature operators. This is based on joint work with M. Kummer and R. Mendes.

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