

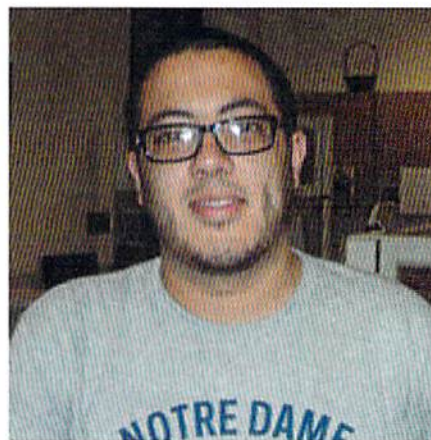
GEOMETRIC ANALYSIS SEMINAR

Speaker: Samuel Perez-Ayala
University of Notre Dame

Date: Thursday, April 4, 2019

Time: 11:00 AM

Location: 258 Hurley Hall



Lecture Title:

Extremal Metrics for Conformally Covariant Operators

Abstract

Let M^n be a closed n -dimensional Riemannian manifold endowed with a conformal class $[g]$. A metric dependent, elliptic, self-adjoint operator $A_g : C^\infty(M) \rightarrow C^\infty(M)$ is said to be conformally covariant of bidegree (a, b) , if under the conformal change $\tilde{g} = e^{2w}g$, A_g and $A_{\tilde{g}}$ are related by $A_{\tilde{g}}(\varphi) = e^{-bw}A_g(e^{aw}\varphi)$. I will discuss the “critical points” of the functional $[g] \ni \tilde{g} \mapsto \lambda_k(A_{\tilde{g}})$ in certain classes of metrics and its implications. Here $\lambda_k(A_{\tilde{g}})$ denotes the k -th eigenvalue of $A_{\tilde{g}}$. In dimension 2, for instance, if one consider $[g] \ni \tilde{g} \mapsto \lambda_1(\Delta_{\tilde{g}})$ on the subset $[g]_1 \subset [g]$ of unit volume metrics, one finds that extremal metrics give existence of harmonic maps into higher dimensional spheres. If time allows I will briefly discuss similar results for the Paneitz operator ($n = 4$) and for the Conformal Laplacian ($n \geq 3$).