Bay Area Differential Geometry Seminar
Saturday, February 25, 2017
MSRI, Berkeley
Second Announcement

The seminar will take place from 10AM to 5PM on Saturday, February 25, 2017. Participants and their significant others are invited to a dinner at a local restaurant on Saturday evening. The cost of the dinner will be reduced for students and postdocs. Details are on the signup page (which you can access by this link: **signup list***).*
Directions to MSRI are available on the website msri.org.

- 10:00–11:00 **Reception, Morning Coffee**

- 11:00-12:00 **Adam Jacob, UC Davis**: *Singular instantons with applications to G_2 manifolds.*

Given a complete Kähler manifold X with a cylindrical end, in this talk I will prove existence of a singular Hermitian-Yang-Mills connection over X. Furthermore, I will demonstrate how to achieve exponential decay of a solution along the cylindrical end, and how to understand the structure of the singularity in certain cases. This work has applications to the study of G_2-instantons, and is joint with H. Sa Earp and T. Walpuski.

- 12:00–1:45 **Lunch**

We will have lunch at MSRI. Orders for food will be placed before the first lecture.

- 1:45–2:00 **BADG organizational meeting.**

- 2:00–3:00 **Christos Mantoulidis, Stanford and MIT**: *Fill-ins, scalar curvature, and quasilocal mass*

Abstract: We will discuss the interplay between the total boundary mean curvature and the interior scalar curvature of compact mean-convex 3-manifolds with nonnegative scalar curvature. We'll also talk about a derived "cut-and-fill" technique on 3-manifolds of nonnegative scalar curvature. It is used in studying a priori L^1 estimates for boundary mean curvature for compact initial data sets with spherical boundary and arbitrary interior topology, and in generalizing Brown-York mass in an entirely geometric fashion with interesting applications. Parts of this talk reflect work done jointly with P. Miao.

- 3:00–4:00 **Afternoon Tea-Coffee**

- 4:00–5:00 **Laura Fredrickson, Stanford**: *A circle action on wild Hitchin moduli spaces.*

Hitchin's equations are a system of gauge theoretic equations on a Riemann surface that are of interest in many areas including representation theory, Teichmuller theory, and the geometric Langlands correspondence. In this talk, Ill discuss a $U(1)$ action on a particular class of Hitchin moduli spaces on $\mathbb{CP}^1$ with an irregular singularity at infinity. Historically, circle actions on Hitchin moduli space have been useful for extracting algebraic data from the moduli space. In our context, we use the circle action to extract the wild Hitchin character, which encodes rich algebraic and geometric data about the Hitchin moduli space. These particular moduli spaces have been conjecturally related to a number of different of different

mathematical objectspossibly as a consequence of physical dualitiesand Ill discuss one such relation, and its concrete manifestation in a correspondence between fixed points of this circle action and highest weight representations of W-algebra minimal models.

This talk is based on joint work with Andy Neitzke (forthcoming); Du Pei, Wenbin Yan, and Ke Ye (1701.08782).

• 6:00 **Dinner** *Please sign up using the link* **signup list** *at the top of this announcement.*