

## Conference Announcement

# Maryland Analysis and Geometry Atelier

August 21 – 25, 2017

Department of Mathematics,  
University of Maryland

### Minicourses

**Rafe Mazzeo**

Stanford University

**Dror Varolin**

Stony Brook University

**Alex Wright**

Stanford University

### Research Talks

**Steve Bradlow**

University of Illinois

**Otis Chodosh**

Princeton University

**Simion Filip**

Harvard University

**Ailana Fraser**

University of British Columbia

**Mike Wolf**

Rice University

### Organizers

**Paolo Piccione**

University of São Paulo

**Yanir A. Rubinstein**

University of Maryland

**Richard A. Wentworth**

University of Maryland

The registration deadline for the Maryland Analysis and Geometry Atelier is **April 30**.

To apply, go to

<https://www-math.umd.edu/maga>

Graduate students, postdocs, and early-career mathematicians are especially encouraged to participate and apply for financial support.

Financial support for this event is available by a UMD (University of Maryland)-FAPESP (Fundacao de Amparo a Pesquisa do Estad de Sao Paulo) seed grant to Piccione and Rubinstein and by the National Science Foundation GEAR (GEometric structures And Representation varieties) network.

Let us first consider a domain  $D = U \times \Omega$  in  $\mathbb{C}^m \times \mathbb{C}^n$  and a function  $\phi$ , plurisubharmonic in  $D$ . We also assume for simplicity that  $\phi$  is smooth up to the boundary. Then, for each  $t$  in  $U$ ,  $\phi^t(\cdot) := \phi(t, \cdot)$  is plurisubharmonic in  $\Omega$  and we denote by  $A_t^2$  the Bergman spaces of holomorphic functions in  $\Omega$  with norm

$$\|h\|^2 = \|h\|_t^2 = \int_{\Omega} |h|^2 e^{-\phi^t}.$$

The spaces  $A_t^2$  are then all equal as vector spaces but have norms that vary with  $t$ . The - infinite rank - vector bundle  $E$  over  $U$  with fiber  $E_t = A_t^2$  is therefore trivial as a bundle but is equipped with a nontrivial metric. The first result of this paper is the following theorem.

**THEOREM 1.1.** *If  $\phi$  is (strictly) plurisubharmonic, then the hermitian bundle  $(E, \|\cdot\|_t)$  is (strictly) positive in the sense of Nakano.*

B. Berndtsson, *Curvature of vector bundles associated to holomorphic fibrations*, Ann. of Math. 169 (2009), 531-560.

### Goals

The Maryland Analysis and Geometry Atelier aims to bring together students and researchers working on analytic aspects of problems in geometry and dynamics.

The program will include a mix of mini-courses and research talks with an emphasis on introducing a variety of geometric and analytic techniques that could have wide applications to different problems in geometric analysis and related areas.

The main events of the workshop will be three 5-hour minicourses. In addition, each day there will be one research talk. The intention is to also allow ample time for discussion and collaboration.

