

## WORKSHOP

### GEOMETRIC ANALYSIS IN GEOMETRY AND TOPOLOGY 2015

Workshop 「Geometric Analysis in Geometry and Topology 2015  
(小林治教授(大阪大・理)の60歳還暦をお祝いして)」を下記の要領で開催  
いたしますのでご案内申し上げます。

#### 記

日時：11月9日(月)～11月12日(木)・・・4日間  
場所：東京理科大学(神楽坂), 森戸記念館

★11月10日(火)18:00より, 小林教授の還暦のお祝いしてパーティーを行います。  
(パーティーに関しては, 時期が近づきましたらご連絡させていただきます。)

#### 講演者：

- ・ Bernd Ammann (Regensburg, Germany)
- ・ Boris Botvinnik (University of Oregon, USA)
- ・ Claude LeBrun (SUNY at Stony Brook, USA)
- ・ Rafe Mazzeo (Stanford University, USA)
- ・ Jimmy Petean (CIMAT, Mexico)
- ・ Harish Seshadri (Bangalore, India)
- ・ 小林治 (大阪大学・理)
- ・ 金井雅彦 (東京大学・数理)
- ・ 小磯深幸 (九州大学・数理)
- ・ 小谷元子 (東北大学・理)
- ・ 梅原雅顕 (東京工業大学・情報)
- ・ 山田光太郎 (東京工業大学・理工)
- ・ 納谷信 (名古屋大学・多元数理)
- ・ 松尾信一郎 (大阪大学・理)

#### スケジュール

.....	10:00-11:00	11:30-12:30	14:00-15:00	15:30-16:30	18:00~
Nov. 9	LeBrun	Mazzeo	Kanai	Matsuo	
Nov. 10	LeBrun	Yamada	Kotani	Kobayashi	Party
Nov. 11	Botvinnik	Ammann	Seshadri	Koiso	
Nov. 12	Ammann	Petean	Umehara	Nayatani	

#### 組織員：

- ・ 小池直之 (東京理科大学・理)
- ・ 中村 周 (東京大学・数理)
- ・ 古田幹雄 (東京大学・数理)
- ・ 小林 治 (大阪大学・理)
- ・ 松尾信一郎 (大阪大学・理)
- ・ Rafe Mazzeo (Stanford University, Foreign adviser)
- ・ 芥川和雄 (東京工業大学・理工)
- ・ 高木章子 (担当事務：東京工業大学・理工)

## Program

### November 9th (Monday)

10:00–11:00

**Claude LeBrun**

“ Einstein Metrics, Weyl Curvature, and Symplectic 4-Manifolds ”

11:30–12:30

**Rafe Mazzeo**

“ TBA ”

12:30–14:00 **Lunchtime**

14:00–15:00

**金井 雅彦**

“ The cross ratio and its folks ”

15:30–16:30

**松尾 信一郎**

“ Kobayashi’s prescribed scalar curvature problem ”

### November 10th (Tuesday)

10:00–11:00

**Claude LeBrun**

“ Mass in Kähler Geometry ”

11:30–12:30

**山田 光太郎**

“ Analytic extensions of spacelike maximal surfaces in Minkowski 3-space to timelike surfaces ”

12:30–14:00 **Lunchtime**

14:00–15:00

**小谷 元子**

“ Mathematical Challenge to structural understanding of Materials ”

**Abstract** AIMR challenges to establish a basis of predicting properties/functions of materials by mathematics-materials science collaboration. Three target projects “ non- equilibrium materials based on mathematical dynamical system ”, “ Topological functional materials ”, “ Multi-scale hierarchical materials based on discrete geometric analysis ” are set up. I would like to discuss some emerging results in the projects.

15:30–16:30

**小林 治**

“ Conformal length through Laguerre geometry ”

18:00 ~ **Dinner (Party)**

### November 11th (Wednesday)

10:00–11:00

**Boris Botvinnik**

“ Topology of the space of metrics with positive scalar curvature ”

11:30–12:30

**Bernd Ammann**

“ Topology of the space of D-minimal metrics ”

12:30–14:00 **Lunchtime**

14:00–15:00

**Harish Seshadri**

“ Positive isotropic curvature and self-duality ”

15:30–16:30

小磯 深幸

“ On bifurcation and local rigidity of triply periodic minimal surfaces in the three-dimensional Euclidean space ”

### November 12th (Thursday)

10:00–11:00

**Bernd Ammann**

“ The Yamabe invariant and surgery ”

11:30–12:30

**Jimmy Petean**

“ Stability of the Yamabe equation on non-compact manifolds ”

**Abstract** We will discuss the stability of solutions of the Yamabe equation on non-compact manifolds. In the case of the Riemannian product of Euclidean space with a closed manifold  $M$  of positive constant scalar curvature there is a unique solution  $F$  which depends only on the Euclidean variable. The solution  $F$  is actually an extremal function for the Gagliardo-Nirenberg inequality. It is believed that it is a minimizer for the Yamabe functional on the product in some cases (for instance when  $M$  is Einstein). We will see that there is a dimensional constant  $L$  such that  $F$  is stable if and only if the first (positive) eigenvalue of the Laplace operator on  $M$  is greater than or equal to  $L$ . We will discuss how to compute  $L$  to see that  $F$  is stable if the metric on  $M$  is a Yamabe minimizer.

12:30–14:00 **Lunchtime**

14:00–15:00

梅原 雅顕

“ indices of isolated umbilics on surfaces ”

15:30–16:30

納谷 信

“ Fixed-point property for uniformly Lipschitz affine actions on a Hilbert space ”