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We would like to invite you to the

## Complex Analysis Conference in Honour of Gregor Herbort's 65<sup>th</sup> Birthday

at the University of Wuppertal on

1. December 2016

### Schedule

10:00–10:50	G.15.20	Klas Diederich	A characterization of the unit-ball by the use of the squeezing-function
11:00–11:50	G.15.20	Jeffery McNeal	The Bergman projection on generalized Hartogs triangles
12:00–13:30			lunch break
13:30–14:20	K.11.07	Bo Berndtsson	Lelong numbers and vector bundles
14:30–15:20	K.11.07	Kang-Tae Kim	On the boundary points at which the squeezing function reaches 1
15:30–16:00			coffee break
16:00–16:50	K.11.07	Włodzimierz Zwonek	Bergman kernel, metric, distance and hyperconvexity
17:00–17:50	K.11.07	Takeo Ohsawa	Some recent developments in the $L^2$ extension theory.

# **Titles and Abstracts**

Klas Diederich

## **A characterization of the unit-ball by the use of the squeezing-function.**

In collaboration with J. E. Fornæss and E. F. Wold.

Jeffery McNeal

## **The Bergman projection on generalized Hartogs triangles.**

Abstract: I will introduce a class of domains in  $\mathbb{C}^2$ , that interpolate between the classical Hartogs triangle and the product domain  $D \times D^*$ , and discuss their Bergman theory. The main result is that the Bergman projection,  $B$ , of these domains is only bounded on  $L^p$  for a restricted range of  $p$ . Moreover, that range shrinks to 2 as the domains fill out  $D \times D^*$ . (a surprising fact since on  $D \times D^*$   $B$  maps  $L^p$  to itself boundedly for all  $1 < p < \infty$ .)

Bo Berndtsson

## **Lelong numbers and vector bundles.**

Abstract: We consider a holomorphic vector bundle over the unit disk, endowed with an Hermitian metric of negative curvature, that may be singular at the origin. We define a notion of Lelong numbers of the metric at the origin. These Lelong numbers induce a filtration of the fiber of the bundle, and we show that the dual filtration on the dual vector bundle is characterized by integrability conditions. We also discuss examples, showing how this picture arises naturally, e.g. in connection with the strong openness conjecture (now a theorem of Guan–Zhou) and  $L^2$ -extension from singular varieties.

Kang-Tae Kim

## **On the boundary points at which the squeezing function reaches 1.**

Abstract: J. E. Fornæss posed the question whether boundary point is strictly pseudoconvex when the squeezing function of the smoothly bounded pseudoconvex domain is asymptotically 1. We answer to this question positively if the domain is of finite type dimension 2. This is a joint work with SeungRo Joo, a graduate student at POSTECH.

Włodzimierz Zwonek

## Bergman kernel, metric, distance and hyperconvexity.

Abstract: This is intended to be a survey of results obtained in the last two decades on the notions involved. The mutual relations between the notions will be given. In the talk examples illustrating different phenomena and open problems will be presented, too.

Takeo Ohsawa

## Some recent developments in the $L^2$ extension theory.

After a joint work of mine with K. Takegoshi, various  $L^2$  extension theorems have been established. Recently an optimal one was established by Błocki [B-1] and Guan and Zhou [G-Z], almost at the same time. As a result, a conjecture made by N. Suita [S] was settled. Afterwards, inspired by Błocki's alternate proof of Suita's conjecture (cf. [B-2]), Berndtsson and Lempert [B-L] discovered a new proof of the optimal  $L^2$  extension theorem based on a completely different principle. After reviewing these achievements, more recent results including reformulations and applications of the  $L^2$  extension theorem will be presented.

## References

- [B-L] Berndtsson, B. and Lempert, L., *A proof of the Ohsawa-Takegoshi theorem with sharp estimates*, arXiv:1407.4946
- [Bl-1] Błocki, Z., *Suita conjecture and the Ohsawa-Takegoshi extension theorem*, Invent. Math. **193** (2013), 149–158.
- [Bl-2] —, *Bergman kernel and pluripotential theory*, to appear in Proceedings of the Conference in honor of Duong Phong, Contemporary Mathematics, American Mathematical Society.
- [G-Z] Guan, Q.-A. and Zhou, X.-Y., *A solution of an  $L^2$  extension problem with an optimal estimate and applications*, Ann. of Math. (2) **181** (2015), no. 3, 1139–1208.