

Conference at NTT-IFM:

**New aspects on Representation Theory - Number Theory, Graphs and Special Functions**

Conference Program (tentative)

Organizer: Masato Wakayama (NTT Institute of Fundamental Mathematics)

June 20, Monday 13:00-17:30.

Venue: NTT Musashino R&D center (Conference Room)

13:00- 14:00 Roger E. Howe

*The Theta Correspondences: Structure and Applications*

14:10-14:55 Shuji Horinaga

*On archimedean zeta integral attached to Siegel cusp forms*

15:00-15:45 Hiroyuki Ochiai

*A new family of special functions with the specified accessory parameters.*

14:55-16:40 Kazufumi Kimoto

*Immanants of the normalized Laplacian matrices for graph families*

16:45- 17:30 Cid Reyes-Bustos

*Non-regular expanders and group-subgroup expansion*

***Lecture by Professor Roger Howe (Yale University)***

**The Theta Correspondence - Origins, Results, and Ramifications**

June 23, Thursday 15:00-16:30

Venue: NTT Musashino R&D center (Conference Room)

\* No fee is required to attend at the lecture.

-----  
Masato Wakayama  
Fundamental Mathematics Research Principal,  
NTT Institute of Fundamental Mathematics

Speaker: Roger E. Howe (Yale University)

Title: Theta Correspondences: Structure and Applications (Monday)

The Theta Correspondence - Origins, Results, and Ramifications (Thursday)

Abstracts: (attached file)

Speaker: Kazufumi Kimoto (University of the Ryukyus)

Title: Immanants of the normalized Laplacian matrices for graph families

Abstract: In this talk we give a formula for immanants of the normalized Laplacian matrices for several graph families. We also discuss the alpha-determinant analog of it.

Speaker: Hiroyuki Ochiai (Kyushu University)

Title: A new family of special functions with the specified accessory parameters.

Abstract: Motivated by the description of the spectra of non-commutative quantum system, we introduce a new family of special functions satisfying Fuchsian ordinary differential equation with polynomial coefficients on the Riemann sphere, whose accessory parameter is specified by the consistency of middle convolution.

Speaker: Cid Reyes Bustos (NTT IFM)

Title: Non-regular expanders and group-subgroup expansion

Abstract: In this talk we shortly describe the expansion properties of a non-regular generalization of Cayley graphs called group-subgroup pair graphs and its relationship with the representation theory of the underlying group and subgroups. This allows us to think of "group-subgroup expansion" following the known theory of group expansion.

Speaker: Shuji Horinaga (NTT IFM)

Title: On archimedean zeta integral attached to Siegel cusp forms

Abstract: For the arithmeticity of critical L values attached to Siegel cusp forms, the archimedean zeta integrals are one of the fundamental objects. However, their computation is known only in a few cases. In this talk, we give a framework of the computation in general cases. We also discuss the application of the computation for the arithmeticity of critical L values.