

Lie Groups and Representation Theory Seminar at the University of Tokyo

リー群論・表現論セミナー

- DATE January 27 (Tue), 2015, 16:30–18:00
- PLACE Room 126, Graduate School of Mathematical Sciences
- SPEAKER **Hironori Oya** (大矢浩徳) (the University of Tokyo)
- TITLE Representations of quantized function algebras and the transition matrices from Canonical bases to PBW bases
- ABSTRACT Let G be a connected simply connected simple complex algebraic group of type ADE and \mathfrak{g} the corresponding simple Lie algebra. In this talk, I will explain our new algebraic proof of the positivity of the transition matrices from the canonical basis to the PBW bases of $U_q(\mathfrak{n}^+)$. Here, $U_q(\mathfrak{n}^+)$ denotes the positive part of the quantized enveloping algebra $U_q(\mathfrak{g})$. (This positivity, which is a generalization of Lusztig's result, was originally proved by Kato (Duke Math. J. 163 (2014)).) We use the relation between $U_q(\mathfrak{n}^+)$ and the specific irreducible representations of the quantized function algebra $\mathbb{Q}_q[G]$. This relation has recently been pointed out by Kuniba, Okado and Yamada (SIGMA. 9 (2013)). Firstly, we study it taking into account the right $U_q(\mathfrak{g})$ -algebra structure of $\mathbb{Q}_q[G]$. Next, we calculate the transition matrices from the canonical basis to the PBW bases using the result obtained in the first step.