Lie Groups and Representation Theory Seminar at the University of Tokyo

リー群論・表現論セミナー

DATE July 8 (Tue), 2025, 16:00–17:00

PLACE Room 128

SPEAKER **Koichi ARASHI (嵐 晃一)** (Tokyo Gakugei University)

TITLE On integral representations of reproducing kernels on quasi-symmetric Siegel domains / 擬対称領域上の再生核の積分表示について

ABSTRACT L. Schwartz established the foundational theory of reproducing kernels in the 1960s. Around the same time, S. G. Gindikin obtained an explicit integral representation of the Bergman kernel for the Siegel domain of the second kind $\mathcal{S}(\Omega, Q) \subset U_{\mathbb{C}} \times V$. This formula suggests that the set of irreducible unitary representations of the generalized Heisenberg group $G^V = U \rtimes V$ realized on this domain is embedded in the unitary dual of the group. Such a notion of multiplicity-freeness property has since been reconsidered from a complex-geometric standpoint, motivated by Huckleberry–Wurzbacher's study of "coisotropic actions" and by T. Kobayashi's introduction of "visible actions", and its understanding continues to deepen. In this talk, we focus on a quasi-symmetric Siegel domain, and for a real subspace $W \subset V$, study the representations of the subgroup $G^W = U \rtimes W$. We show that the multiplicity-freeness property can be characterized both by geometric features of the group action and by the multiplicity-free irreducible decomposition of the unitary representation on the Bergman space.