Lie Groups and Representation Theory Seminar at the University of Tokyo

リー群論・表現論セミナー

(Joint with Tuesday Seminar on Topology)

DATE April 22 (Tue), 2025, 17:30–18:30

PLACE Room 056 (hybrid)

SPEAKER **Takayuki Okuda (奥田隆幸)** (Hiroshima University)

TITLE Coarse coding theory and discontinuous groups on homogeneous spaces

ABSTRACT Let M and $\mathcal{I}$ be sets, and consider a surjective map

$$R : M \times M \to \mathcal{I}.$$

For each subset $\mathcal{A} \subseteq \mathcal{I}$, we define $mathcalA$-free codes on M as subsets $C \subseteq M$ satisfying

$$R(C \times C) \cap \mathcal{A} = \emptyset.$$

This definition encompasses various types of codes, including error- correcting codes, spherical codes, and those defined on association schemes or homogeneous spaces. In this talk, we introduce a "pre-bornological coarse structure" on $mathcalI$ and define the notion of coarsely $\mathcal{A}$-free codes on M. This extends the concept of $\mathcal{A}$-free codes introduced above. As a main result, we establish relationships between coarse coding theory on Riemannian homogeneous spaces $M = G/K$ and discontinuous group theory on non-Riemannian homogeneous spaces $X = G/H$.