

東北大学大学院情報科学研究科
純粋・応用数学研究センター

情報数理談話会のお知らせ

日 時： 2017年6月14日(水) 16:00より17:00まで
(会場にお茶を用意しております)

場 所： 東北大学大学院情報科学研究科棟 2階大講義室

講演者： John Vincent S. Morales 氏 (東北大学大学院情報科学研究科)

題 目： On extensions of commutative association schemes

備 考： この情報数理談話会は課程博士予備審査会を兼ねています

[概要] For the past decades, the theory has been well-developed for metric and cometric schemes. Hamming schemes, which are extensions of one-class association schemes, belong to this family. In the 1990s, Terwilliger introduced a matrix \mathbb{C} -algebra (known as Terwilliger algebra) attached to each vertex of the scheme. Its representation theory proved to be invaluable in the study of codes and orthogonal polynomials among others. Go, for instance, found connections among the univariate Krawtchouk polynomials, rank one Lie algebra $\mathfrak{sl}_2(\mathbb{C})$, and the Terwilliger algebras of binary Hamming schemes. On the other hand, Tanaka found stronger versions of the Assmus-Mattson theorem using the Terwilliger algebras of metric and cometric schemes. In this talk, we describe the relationship of the bivariate Krawtchouk polynomials, the rank two Lie algebra $\mathfrak{sl}_3(\mathbb{C})$ and the Terwilliger algebras of Lee association schemes over \mathbb{Z}_4 analogous to the work done by Go. In addition, we also extend Tanaka's results to extensions of s -class association schemes with $s \geq 2$.