

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： 2021年12月15日(水) 14:30 より 15:30 まで

場 所： Google Meet によりオンラインで開催

※参加方法はホームページをご覧ください

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題 目： Maximal sets of equiangular lines in Euclidean spaces

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] A set of lines through the origin in a Euclidean space is equiangular if any pair from these lines forms the same angle. The problem to determine the maximum cardinality $N(d)$ of a set of equiangular lines in dimension d dates back to the result of Haantjes in 1948. Lin and Yu introduced a saturated equiangular line system in 2020 in order to investigate equiangular line systems more precisely. Since equiangular line systems can be regarded as Seidel matrices, we treat these matrices. We say that a Seidel matrix is maximal if it comes from a saturated equiangular line system. We present a classification of maximal Seidel matrices of largest eigenvalue 3, which gives a classification of saturated equiangular lines in a Euclidean space with angle $\arccos(1/3)$. Motivated by the maximality of the exceptional root system, we define strong maximality of a Seidel matrix, and show that every Seidel matrix achieving the absolute bound is strongly maximal. In addition, we provide other maximal Seidel matrices and strongly maximal ones.

ホームページ： <https://www.math.is.tohoku.ac.jp/research/colloquium.html>