

乞揭示

Colloquium Lecture, Department of Mathematics, Faculty of Science

神戸大学理学研究科数学教室談話会

日時：2016年11月30日(水)15:00-16:00

場所：神戸大学理学部B棟428-430号室(B棟4階奥)

講演題目：Orthogonal arrays with circulant property:
construction, analysis and applications to fMRI
experiments

講演者：Frederick K. H. Phoa 氏
(Institute of Statistical Science, Academia Sinica)

要旨：

Orthogonal arrays have been widely used in many experiments, but they do not exist for any size. Recently, orthogonal arrays with circulant property receive great attention and are applied in many fields such as stream cypher cryptanalysis and functional magnetic resonance imaging. Since circulant Hadamard matrices, that can be viewed as orthogonal arrays of symbols two and strength two, have been conjectured nonexistence, circulant almost orthogonal arrays (CAOA) are considered. In this talk, we propose a systematic construction to this new class of designs. Complete difference sets (CDS) are also introduced and applied for the construction of CAOAs. We not only prove the equivalence relation of CDS and CAOAs, but also construct CAOAs of any prime power symbols. We further apply these designs to fMRI experiments, demonstrating that our constructed designs have better properties than the traditional designs in terms of cost-efficiency. This is a joint work with my postdoctoral research fellow Dr. Yuan-Lung Lin of Institute of Statistical Science, Academia Sinica, and Professor Jason Ming-Hung Kao of Arizona State University.

同日14:30より数学教室談話室(B棟4階)において講演者を囲んでお茶会を開きます。
皆さまお気軽にご参加下さい。

問合わせ先：〒657-8501 神戸市灘区六甲台町1-1

神戸大学大学院理学研究科数学教室

森本 和輝

Tel:078-803-5620

Email:morimoto@math.kobe-u.ac.jp