ASU **School of Mathematical and Statistical Sciences**

Arizona State University

M E M O R A N D U M

DATE: 04/30/2024

TO: Faculty and Students

FROM: Professor(s)   Ming-Hung Kao   John Stufken
        Chair/Co-Chairs of   Fan Zhang
        Defense for the   PhD   in   Statistics
        Committee Members
                Mark Reiser
                Rong Pan
                Shiwei Lan

DEFENSE ANNOUNCEMENT

Candidate: Fan Zhang

Defense Date: Thursday 5/9/2024

Defense Time: 12 PM

Virtual Meeting Link: https://asu.zoom.us/j/7495024514   Room: WXLR 206 (Tempe)

Title: An Efficient Screening Method for Locating Arrays and Further Studies on Gauss-Dantzig Selector Aggregation over Random Models

Please share this information with colleagues and other students, especially those studying in similar fields. Faculty and students are encouraged to attend. The defending candidate will give a 40-minute talk, after which the committee members will ask questions. There may be time for questions from those in attendance. However, guests are primarily invited to attend as observers and will be excused when the committee begins its deliberations or if the committee wishes to question the candidate privately.

ABSTRACT
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Supersaturated designs are widely used in screening problems, offering considerable cost savings. A supersaturated design is a factorial design with fewer runs than the effects to be estimated. This study primarily discusses two factor screening methods for supersaturated designs: the Locating Array method and GDS-ARM. We introduce the Locating Array Method and compare it with the Dantzig selector. Surprisingly, the Locating Array consistently outperforms the Dantzig selector. We then explore GDS-ARM methods with some modifications and extend it to mixed-level designs, providing new recommendations for the parameters on mixed-level designs. Additionally, a comparative analysis between GDS-ARM and LA methods for mixed-level designs is conducted, with GDS-ARM being recommended based on superior performance. This study paves the way for future research to further refine these methodologies and contribute to the evolving demands of experimental design screening.