



復旦大學  
FUDAN UNIVERSITY

# Applied Math Ph.D. Seminar

## Sharp Estimates for Optimal Multistage Group Partition Testing

**Speaker:** Guojiang Shao (Fudan University)

**Time:** 2025-09-18, 16:10 to 17:00

**Location:** Rm 1801, Guanghai East Tower

**Advisor:** Qi Zhang (Fudan University)

**Abstract:** In multistage group testing, the tests within the same stage are considered nonadaptive, while those conducted across different stages are adaptive. Especially, when the pools within the same stage are disjoint, meaning that the entire set is divided into several disjoint subgroups, it is referred to as a multistage group partition testing problem, denoted as the  $(n, d, s)$  problem, where  $n$ ,  $d$ , and  $s$  represent the total number of items, defectives, and stages respectively. We present exact solutions for the  $(n, 1, s)$  and  $(n, d, 2)$  problems for the first time. Furthermore, we develop a general dynamic programming framework for the  $(n, d, s)$  problem, which allows us to derive the sharp estimation of upper and lower bounds.