

# 國立中央大學數學系

## 專題演講

主講人：張惠蘭教授（國立高雄大學應用數學系）

題目：Density-based Interval Group Testing

演講茶會：2017年12月14日(星期四) 3:30 p.m. ~ 4:00 p.m.

茶會地點：中央大學鴻經館M306

演講時間：2017年12月14日(星期四) 4:00 p.m. ~ 5:00 p.m.

地點：中央大學鴻經館M107

### Abstract：

In the classical model of group testing, we are given  $n$  objects, some of which are considered to be defective. We can test any set of objects to see whether it contains any defective element. The goal is to find all defectives by using as few group tests as possible. Gerbner et al. (2013) studied the density-based group testing which is a generalization of the classical group testing. In this model, a ratio  $0 < \alpha \leq 1$  is given and a group test on a set of objects tells whether the concentration of the defectives in the set is at least  $\alpha$ . Motivated by an application in determining exon-intron boundaries within a gene, Cicalese et al. (2007) studied interval group testing where all objects in the search space are linearly ordered and each group test consists of objects that are consecutive in the order. We use density-based group tests to deal with the interval group testing problem. In this talk, I will present some lower bounds and introduce our algorithms which are almost optimal. This is a joint work with Guan-Hao Huang.

**Keywords:** Group testing; Density-based; Sequential algorithm; Interval group testing.

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1. 國家理論科學研究中心
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