

國立高雄大學應用數學系106學年度第2學期碩士班書報討論報告

地 點：應用數學系多媒體教室（理408室）

日 期：107年6月20日（星期三）

演講者	時 間	講題	摘要
陳逸倫	14 : 30 ~ 15 : 30	Threshold and majority group testing	Group testing is a search problem which is given an n-element set N with an unknown subset $\mathcal{D}$ of all defective elements. Our goal is to identify $\mathcal{D}$ by using tests on subsets $\mathcal{S}$ of N. Each test on $\mathcal{S}$ tells some information about the content of $\mathcal{S}$. Nowadays, group testing is of interest in chemical and biological testing, DNA mapping, and also in several computer science applications. We introduce two models of group testing: threshold group testing and majority group testing which is a generalization of threshold group testing. In majority group testing, there are two functions $f_1, f_2: \{0, 1, \dots, n\} \rightarrow \mathbb{R}^+$ putting weights on the number $d = \mathcal{D} \in \{0, 1, \dots, n\}$ and a group test on $\mathcal{S}$ can be describe as follows $t(\mathcal{S}) = \begin{cases} 0, & \text{if } \mathcal{S} \cap \mathcal{D} < f_1(d) \\ 1, & \text{if } \mathcal{S} \cap \mathcal{D} > f_2(d) \\ 0 \text{ or } 1, & \text{otherwise} \end{cases}$ In this talk, we introduce a special case of majority group testing which was introduced by Lebedev (2010) and present a generalization of the special case (Ahlsweide et al. 2011). References: [1] R. Ahlsweide, C. Deppe and V. Lebedev, Threshold and majority group testing, Information Theory, Combinatorics, and Search Theory pp 488-508, 2011 [2] V. Lebedev, Separating codes and a new combinatorial search model, <i>Probl. Inf. Transm.</i> 46, No. 1, 1-6, 2010.