

Summer Intern 2024

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實習內容將針對衰變分析與最佳實驗計畫為主，詳細請參考 PI 近年文章。有興趣者請嘗試底下題目，在申請截止日期前寄到 chienyu@stat.sinica.edu.tw，信件主旨請寫上 Summer Intern 2024-你的姓名。

1. Show that for $1 \leq r \leq m$,

$$\sum_{1 \leq i_1 < \dots < i_r \leq m} i_1 i_r \prod_{j=1}^{r-1} (i_{j+1} - i_j) = r \binom{m+r}{m-r} \frac{2m+1}{2r+1}.$$

2. Consider the constrained maximization problem and the objective function is given by

$$f(p_1, p_2, p_3, p_4) = \alpha_{1,2} p_1 p_2 + \alpha_{1,3} p_1 p_3 + \alpha_{1,4} p_1 p_4 + \alpha_{2,3} p_2 p_3 + \alpha_{2,4} p_2 p_4 + \alpha_{3,4} p_3 p_4,$$

where $0 \leq p_i \leq 1$ with $\sum_{i=1}^4 p_i = 1$ and the coefficients $\alpha_{i,j}$ are non-negative for $1 \leq i < j \leq 4$.