

10 29

2024-10-29

1 n-1

1.1

G Helmert

$$G = \begin{bmatrix} \frac{1}{\sqrt{n}} & \frac{1}{\sqrt{n}} & \frac{1}{\sqrt{n}} & \cdots & \frac{1}{\sqrt{n}} \\ \frac{-1}{\sqrt{1 \cdot 2}} & \frac{1}{\sqrt{1 \cdot 2}} & 0 & \cdots & 0 \\ \frac{-1}{\sqrt{2 \cdot 3}} & \frac{-1}{\sqrt{2 \cdot 3}} & \frac{2}{\sqrt{2 \cdot 3}} & \cdots & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ \frac{-1}{\sqrt{(n-1) \cdot n}} & \frac{-1}{\sqrt{(n-1) \cdot n}} & \frac{-1}{\sqrt{(n-1) \cdot n}} & \cdots & \frac{n-1}{\sqrt{(n-1) \cdot n}} \end{bmatrix}$$

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$$s^2 = \frac{1}{n} \sum_{i=1}^n (X_i - \bar{X})^2 \qquad V^2 = \frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})^2$$

$$\sum_{i=1}^n (X_i - \bar{X})^2 = \sum_{i=1}^n X_i^2 - n\bar{X}^2 = \sum_{i=1}^n Y_i^2 - Y_1^2 = \sum_{i=2}^n Y_i^2$$

$$\begin{matrix} Y \\ n-1 \end{matrix} \qquad \begin{matrix} ns^2, (n-1)V^2 \\ n-1 \end{matrix} \qquad \begin{matrix} \sum_{i=1}^n (X_i - \bar{X})^2 \end{matrix}$$

