

الحل النموذجي لامتحان السداسي الأول

• طاولة الشعاع a_2 :

$$\|\vec{oa_2}\|^2 = a_2^t a_2$$

$$\begin{aligned} &= 0.7509^2 + (-0.0916)^2 + 0.2478^2 + (-0.6052)^2 = 0.9999 \\ &= 0.4061^2 + (0.7074)^2 + 0.3297^2 + (-0.4754)^2 = 1.00000 \end{aligned}$$

• الجداء $a_1^t a_2$:

$$\begin{pmatrix} 0.4061 \\ 0.7074 \\ 0.3297 \\ -0.4754 \end{pmatrix} (0.7509 \quad -0.0916 \quad 0.2478 \quad -0.6052) \approx -0.0000$$

هذا يدل على أن الشعاعين متعامدين.

المساهمة النسبية المطلقة:

$$ca\left(\frac{a_1}{I_g}\right) = \lambda_1 = 1.961$$

$$ca\left(\frac{a_1}{I_g}\right) = \lambda_1 = 1.221$$

$$ca\left(\frac{a_1}{I_g}\right) = \lambda_1 = 0.863$$

$$ca\left(\frac{a_1}{I_g}\right) = \lambda_1 = -0.044$$

المساهمة النسبية للمحور:

$$I_g = \sum Var b = \sum \lambda_k = 4$$

$$cr(a_1/I_g) = \frac{\lambda_1}{I_g} = \frac{1.961}{4} = 49.025\%$$

$$cr(a_2/I_g) = \frac{\lambda_2}{I_g} = \frac{1.221}{4} = 30.525\%$$

$$cr(a_3/I_g) = \frac{\lambda_3}{I_g} = \frac{0.863}{4} = 21.575\%$$

$$cr(a_4/I_g) = \frac{\lambda_4}{I_g} = \frac{-0.044}{4} = -1.1\%$$

نسبة تمثيل المستوى:

$$cr(a_1 \oplus a_2/I_g) = \frac{\lambda_1 + \lambda_2}{I_g} = 49.025\% + 30.525\% \approx 79.75\%$$

إحداثيات الأفراد:

2019.5	14	10	6
1.708	2.517	2.646	2.582

$$X_N = \begin{vmatrix} -1.464 & 1.589 & -0.756 & -1.549 \\ -0.878 & 0.000 & 1.890 & -1.162 \\ -0.293 & -0.397 & -0.756 & 0.387 \\ 0.293 & 0.795 & -0.378 & 0.387 \\ 0.878 & -1.589 & -0.756 & 0.775 \\ 1.464 & -0.397 & 0.756 & 1.162 \end{vmatrix}$$

$$\begin{vmatrix} -1.464 & 1.589 & -0.756 & -1.549 \\ -0.878 & 0.000 & 1.890 & -1.162 \\ -0.293 & -0.397 & -0.756 & 0.387 \\ 0.293 & 0.795 & -0.378 & 0.387 \\ 0.878 & -1.589 & -0.756 & 0.775 \\ 1.464 & -0.397 & 0.756 & 1.162 \end{vmatrix} \times \begin{vmatrix} -0.406 & 0.751 \\ 0.707 & -0.092 \\ 0.330 & 0.248 \\ -0.475 & -0.605 \end{vmatrix} = \begin{vmatrix} 2.206 & -0.495 \\ 1.532 & 0.512 \\ -0.596 & -0.605 \\ 0.135 & -0.181 \\ -2.099 & 0.149 \\ -1.179 & 0.620 \end{vmatrix}$$

التمثيل البياني:

