الحل:

1- التباين الكلي في حالة ACP normée يساوي عدد

المتغيرات = 3

2- حساب قيمة x :

في حالة ACP normée معيار الشعاع u_1 يساوي 1 :

$$\|u_1\|^2 = (+0,7)^2 + (-0,15)^2 + x^2 = 1$$

$$0,5125 + x^2 = 1 \Rightarrow x^2 = 1 - 0,5125$$

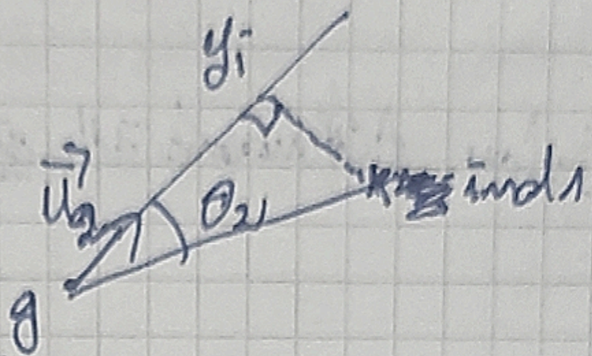
$$\Rightarrow x^2 = 0,4875 \Rightarrow \boxed{x = 0,6982 \text{ ou } -0,6982}$$

بما أن في حالة ACP normée الأشعة الذاتية متعامدة

إذن الجداء السلمي = :

$$u_1 \times u_2 = 0 \Leftrightarrow (-0,7 \times 0,05) + (-0,15) \times (-0,98)^2$$
$$+ x \times 0,17 = 0$$

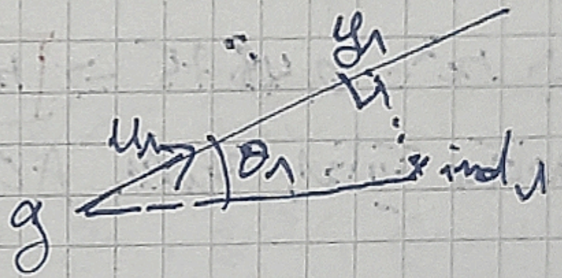
valeur propre λ_i	inertie expliqué $\frac{\lambda_i}{p} = \left(\frac{\lambda_i}{3}\right)$	inertie expliquée cumulée
$\frac{\lambda_1}{3} = 0,56$ $\lambda_1 = 0,56 \times 3 = \boxed{1,68}$	~~0,56~~ 0,56	0,56
$\lambda_2 = 3 - \lambda_1 - \lambda_3 = 0,99$ 0,33	$\frac{\lambda_2}{3} = 0,33$	$0,56 + \frac{\lambda_2}{3} = 0,89$
$\lambda_1 + \lambda_2 + \lambda_3 = 3$	$\frac{\lambda_3}{3} = \frac{0,33}{3} = 0,11$	$0,56 + \frac{\lambda_2}{3} + \frac{0,33}{3} =$ 1,56



$$\cos(\theta)^2 = \frac{(\vec{ind}_1 \times \vec{u}_1)^2}{\|\vec{ind}_1\|^2}$$

[illegible] ind1 [illegible]

$$\cos(\theta_1)^2 = 0{,}37$$



$$\cos(\theta_2)^2 = ?$$

$$\cos(\theta_1)^2 = \frac{(\vec{u}_1 \times \vec{ind}_1)^2}{\|\vec{ind}_1\|^2} = 0{,}37$$

$$\Rightarrow \|ind_1\|^2 = \frac{(\vec{u}_1 \cdot ind_1)^2}{0{,}37}$$

$$\cos(\theta_2)^2 = \frac{(\vec{u}_2 \times \vec{ind}_1)^2}{\|\vec{ind}_1\|^2}$$

	comp1	comp2	comp3
ind1	1,48		
ind2	0,02		

donc =

$$\cos(\theta_2)^2 = \frac{(\vec{u}_2 \times \vec{ind}_1)^2 \times 0{,}37}{(\vec{u}_1 \times \vec{ind}_1)^2}$$

$$\cos(\theta_2)^2 = \frac{(-1{,}92)^2 \times 0{,}37}{1{,}48}$$

$$ctr(ind_1) = \frac{\frac{1}{n}(\vec{ind_1} \times \vec{u_2})^2}{\lambda_2} \qquad - 5$$

$$= \frac{\frac{1}{10} \times (-1{,}92)^2}{0{,}99}$$

$$u_i \begin{pmatrix} a_1 \\ a_2 \\ \vdots \\ a_p \end{pmatrix}$$

$$comp_1 = a_1 X_1 + a_2 X_2 + \dots + a_p X_p \qquad - 6$$

u_1

$$comp_1 = -0{,}7\ var_1 + -0{,}5\ var_2 + x\ var_3$$

$$r(var_1, comp_1) = -0{,}7 \sqrt{\lambda_1} \qquad - 6$$

$$r(Y_1, X_i) = \alpha \cdot \sqrt{\lambda_i}$$