

TD OG3 exo 4

1) Objet à $\ell \infty$: $A_\infty \xrightarrow{(L_1)} F'_1 = Ph$ (Photodétecteur)

objet à distance p : $A \xrightarrow{(L_1)} A' = Ph$ $p = \overline{AO} > 0$

$$\overline{F_1 A} \cdot \overline{F'_1 A'} = -f_1'^2 \quad \overline{F'_1 A'} = \Delta \quad \overline{F_1 A} = \overline{F_1 O_1} + \overline{O_1 A} = f_1' - p$$

$$\Rightarrow \Delta = \frac{-f_1'^2}{f_1' - p} = \frac{f_1'^2}{p - f_1'} = 5 \text{ mm}$$

2) $\gamma_1 = \frac{a}{r} = \frac{\overline{F_1 O_1}}{\overline{F_1 A}} = \frac{f_1'}{f_1' - p} = -0,1 \Rightarrow a = \frac{f_1'}{f_1' - p} \times t \quad a = -1,5 \text{ mm}$

3) $A \xrightarrow{L_0} A_1 \xrightarrow{L_1} A'$
 $\overline{F_0 A} \cdot \overline{F'_0 A_1} = -f_0'^2 \Rightarrow \overline{F_0 A} = \frac{-f_0'^2}{\overline{F'_0 A_1}}$

ou $\overline{F'_0 A_1} = \overline{F'_0 O_0} + \overline{O_0 O_1} + \overline{O_1 A_1} = -f_0' + \ell - p$

$$\Rightarrow \overline{F_0 A} = \frac{-f_0'^2}{-f_0' + \ell - p}$$

$$\overline{O_0 A} = \overline{O_0 F_0} + \overline{F_0 A} = -f_0' - \frac{f_0'^2}{-f_0' + \ell - p} = \frac{f_0'(\ell - p)}{f_0' - \ell + p}$$

$d_1 = \overline{AO_0} = \frac{f_0'(\ell - p)}{f_0' - \ell + p}$ AN $d_1 = 18,75 \text{ cm}$

4) $\gamma_0 = \frac{\overline{O_0 A_1}}{\overline{O_0 A}} = \frac{\ell - p}{-d_1} \quad \gamma_0 = 2,65$
 $\gamma_1 = -0,1$
 $\gamma_T = \gamma_0 \gamma_1 = -0,265$

$\gamma_T = \frac{a_1}{t} \Rightarrow a_1 = \gamma_T t \quad a_1 = -0,40 \text{ cm}$

5) $F_0 \xrightarrow{(L_0)} \infty \xrightarrow{(L_1)} F'_1 \quad d_2 = \overline{F_0 O_0} + f_0' \quad d_2 = 30 \text{ cm}$

6) $B = \phi_0 \xrightarrow{(L_0)} B_1 \infty \xrightarrow{(L_1)} \phi'_1$
 $\tan \alpha = \frac{AB}{f_0} = -\frac{a_2}{f_1'} \quad \text{ou } AB = t$
 $\Rightarrow a_2 = -\frac{f_1' t}{f_0} \quad a_2 = -0,25 \text{ cm}$

