

$$\begin{aligned} & BG \\ & \underline{G_2} \\ & BGD \rightarrow G_2 \end{aligned}$$

(2)a)

$\Delta A A'' = 2 \left( \frac{\ell}{n} + \lambda \right)$

$\Delta = -\frac{S_1 A_1}{n} + \frac{S_1 S_2 + S_2 A_2}{n}$

$= -\frac{S_1 A_1}{n} + \frac{\ell - \sum_{i=2}^n S_i A_i}{n}$

$= -\frac{S_1 A_1}{n} + \frac{\ell - (S_2 S_1 + S_1 A_1)}{n}$

$= -\frac{S_1 A_1}{n} + \frac{2\ell - \sum_{i=2}^n S_i A_i}{n}$

$\Delta A A'' = 2 \left( \frac{\ell}{n} + \frac{2S_1 A_1}{n} - \frac{2\ell}{n} - \frac{2S_1 A_1}{n} \right) = 0$

$A \xrightarrow{S_1} A_1 \xrightarrow{\min \frac{AS_1}{S_2}} A_2 \xrightarrow{S_2}$

$$AA'' = 2 \left( e + d \right)$$

don le miroir équivalent  
à une distance  $e + d$  de A

On distane de  $e + d$

MS

$$\left\langle \times n \right\rangle A = 30^\circ, n = 1,5$$

- incidente Raseante  $i_1 = 0^\circ$

$$r_1 = \sin(i_1) = n \cdot \sin(r_1)$$

$$AN; r_1 = \sin^{-1} \left( \frac{1}{n} \cdot \sin(i_1) \right) \quad A = r_1 + r_2$$

$$r_1 = \sin^{-1} \left( \frac{1}{1,5} \right) = 41,8^\circ \quad D = r_1 + r_2 - A$$

$$r_2 = A - r_1 = 30^\circ - 41,8^\circ = -11,8^\circ$$

$$i_2 = \sin^{-1} (n \cdot \sin(r_2)) = -17,8^\circ$$

$$D = i_1 + i_2 - A = 0^\circ + 41,8^\circ - 30^\circ$$

$$D = 11,8^\circ$$



- Incidende Normale  $i_1 = 0$

$$i_1 = r_1 = 0^\circ$$

$$r_2 = A - r_1 = A = 30^\circ$$

$$i_2 = \sin^{-1} (n \cdot \sin(r_2)) = 48,5^\circ$$

$$D = i_1 + i_2 - A = 0^\circ + 48,5^\circ - 30^\circ = 18,5^\circ$$



$$n \sin(i_2) = \sin(i_1)$$

$$\sin(r_2) = \frac{1}{n}$$

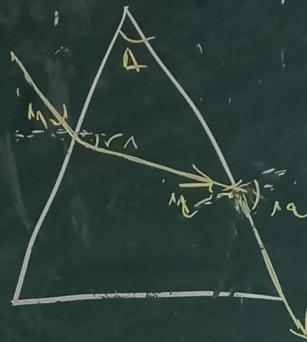
- emergender Raseante  $i_2 = 0^\circ$

$$r_2 = \sin^{-1} \left( \frac{1}{n} \cdot \sin(i_1) \right) = 41,8^\circ$$

$$r_1 = A - r_2 = 30^\circ - 41,8^\circ = -11,8^\circ$$

$$\lambda_1 = \sin^{-1}(n \cdot \sin(\alpha)) = -17,87^\circ$$

$$D = i_1 + i_2 - A = +42,13^\circ$$



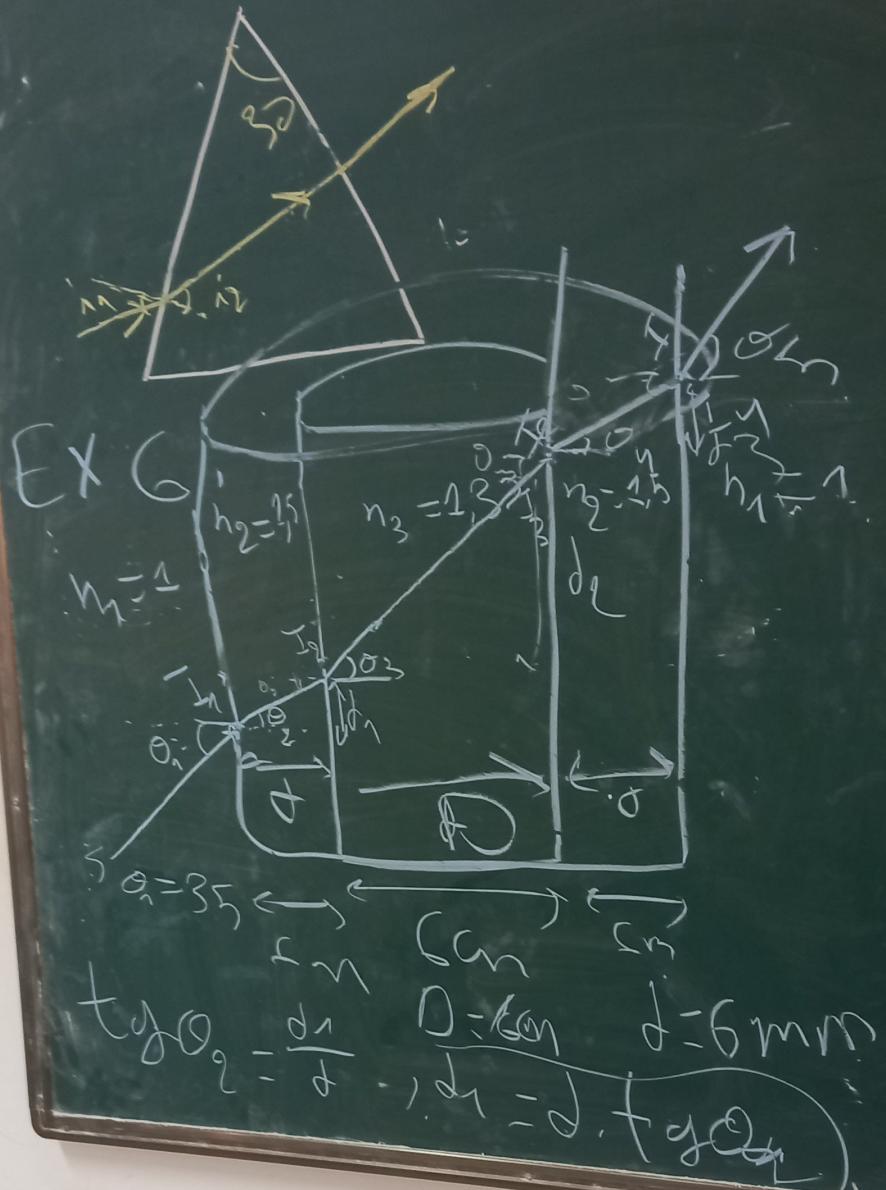
- emerged angle now  $\lambda_2 = 0$

$$r_2 = 0$$

$$r_1 = A - r_2 = 30^\circ$$

$$\lambda_1 = \sin^{-1}(n \cdot \sin(r_1)) = 48,5^\circ$$

$$D = i_1 + i_2 - A = 18,3^\circ$$



$$\sin \theta_1 = n_2 \sin \theta_2 \quad (1)$$

$$n_2 \sin \theta_2 = n_3 \sin \theta_3 \quad (2)$$

$$n_3 \sin \theta_3 = n_4 \sin \theta_4 \quad (3)$$

$$n_4 \sin \theta_4 = n_1 \sin \theta_1$$

$$\sin \theta_1 = n_1 \sin \theta_5$$

$$\theta_1 = \theta_5 = 35^\circ$$

$$\delta V = \delta_1 + \delta_2 + \delta_3$$

$$\delta_2 = D_x t g_2 \alpha_3, \quad \delta_3 = D_x t g_3 \alpha_y$$

$$\delta V = D_x t g_2 \alpha_3 + D_x t g_3 \alpha_y + D_x t g_1$$

3) Uomo

$$L = n \cdot l$$

$$l = \overline{I_1 I_1} + \overline{I_2 I_3} + \overline{I_3 I_4}$$

$$L = \overline{n_1 \overline{I_1 I_1}} + \overline{n_2 \overline{I_2 I_3}} + \overline{n_3 \overline{I_3 I_4}} + \overline{n_4 \overline{I_4 I_1}}$$

$$\text{GO} = \frac{J}{I_a I_a}$$

$$I_a I_a = \frac{J}{\text{GO}_2}$$