220

$\theta_i = \theta_r$

$n_1 \sin\theta_1 = n_2 \sin\theta_2$

$n = \frac{c}{v}$

n (λ)

P R

n_R / n_V ↗

$n_1 > n_2$

$\eta = \frac{c}{v}$

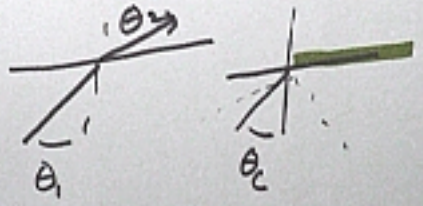
n (λ) P R

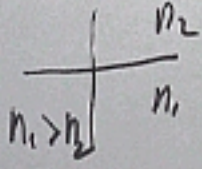
n_R

n_V

$n_1 > n_2$

$n_1 \sin\theta_1 = n_2 \sin\theta_2$





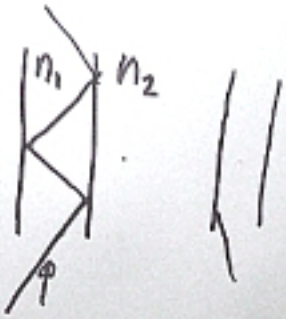
$n_1 \sin\theta_c = n_2$

$\sin\theta_c = \frac{n_2}{n_1}$

Air → n_1

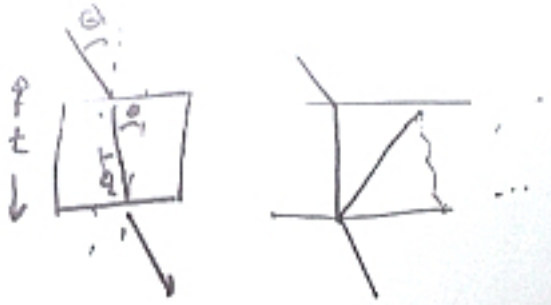
n_2

$n_1 < n_2$



$$\sin\theta_c = \frac{1}{n}$$

$$\frac{1}{f} = \left(\frac{n}{\phi} - 1\right)\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$$



$$S_2 = t \tan\theta_2 \approx t \sin\theta_2$$

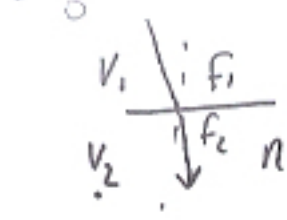
$$S_1 = t \tan\theta_1 \approx t \sin\theta_1$$

$\tan\theta \approx \sin\theta$ small angles

$$d = S_1 - S_2 = t(\sin\theta_1 - \sin\theta_2)$$

$$d = t \sin\theta_1 \left(1 - \frac{n_1}{n_2}\right)$$

$f\lambda = v$



$n = \frac{c}{v}$

n_1 ——— 1.5 ———

n_2

$f_1 \lambda_1 = v_1$

~~n_1~~ $v_1 = \frac{c}{n_1}$

$\lambda = 633\ nm$

$nm = 1 \times 10^{-9}\ m$

$f_1 \lambda_1 = \frac{c}{n_1}$

$n_1 \lambda_1 = n_2 \lambda_2$

$f = \frac{c}{\lambda}$

$f_2 \lambda_2 = \frac{c}{n_2}$

$\lambda_2 = \frac{n_1}{n_2} \lambda_1$

$f \simeq 4.7 \times 10^{14}\ Hz$

$\theta_1 = 37^\circ$

$n_2 = 1$

$n_1 = 1.333$

$n_1 \sin\theta_1 = n_2 \sin\theta_2$

$\sin\theta_2 = \frac{1.333}{1} \sin(37)$

$= 53^\circ$