Lâminas de atraso

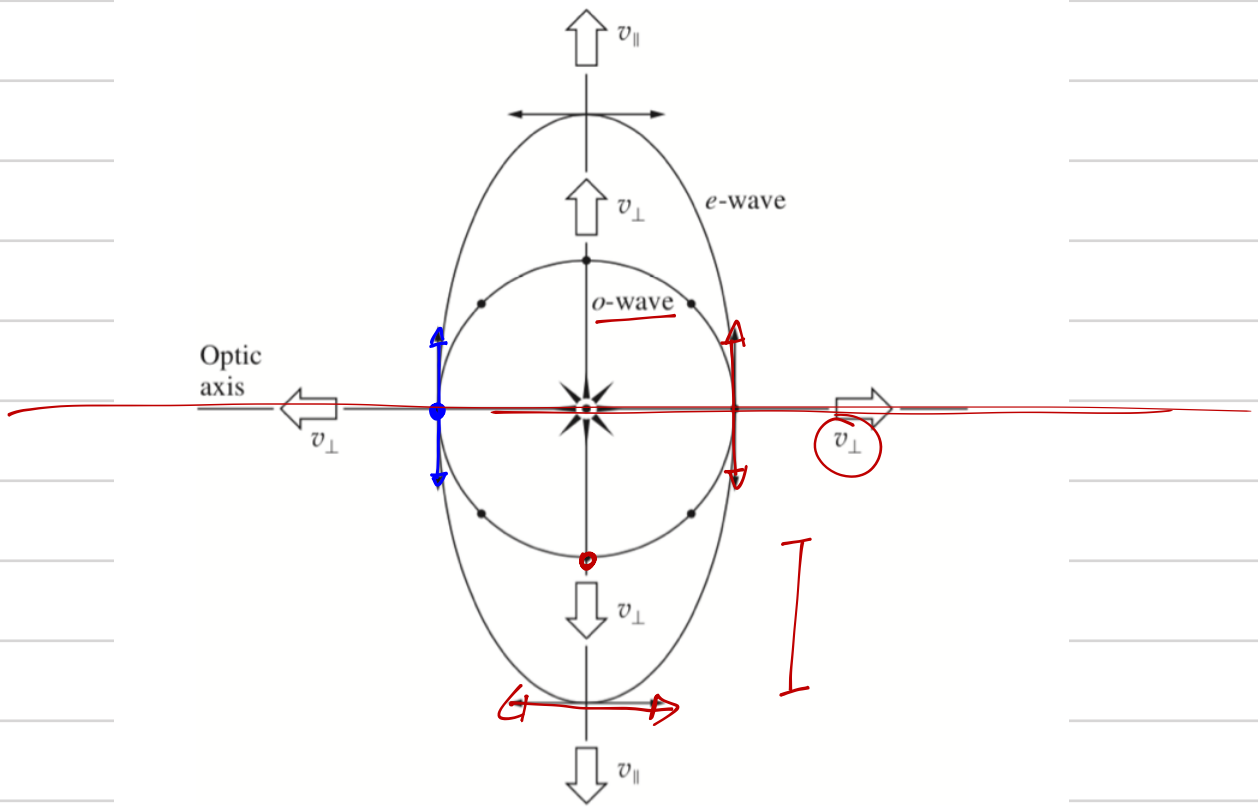


Figure 8.28 Wavelets in a negative uniaxial crystal (their differences much exaggerated). The arrows and dots represent the $\vec{E}$-fields of the extraordinary and ordinary waves, respectively. The $\vec{E}$-field of the *o*-wave is everywhere perpendicular to the optic axis. At these particular locations on the wavelets the $\vec{E}$- and $\vec{D}$-fields are parallel. A line from the center point to the ellipse corresponds to a ray in that direction whose length indicates the wave's speed in that direction. A tangent to the ellipse at the point where that ray intersects the *e*-wave is the direction of $\vec{D}$. And the same is true for the *o*-wave where $\vec{E}$ and $\vec{D}$ are parallel and perpendicular to the plane of the drawing.

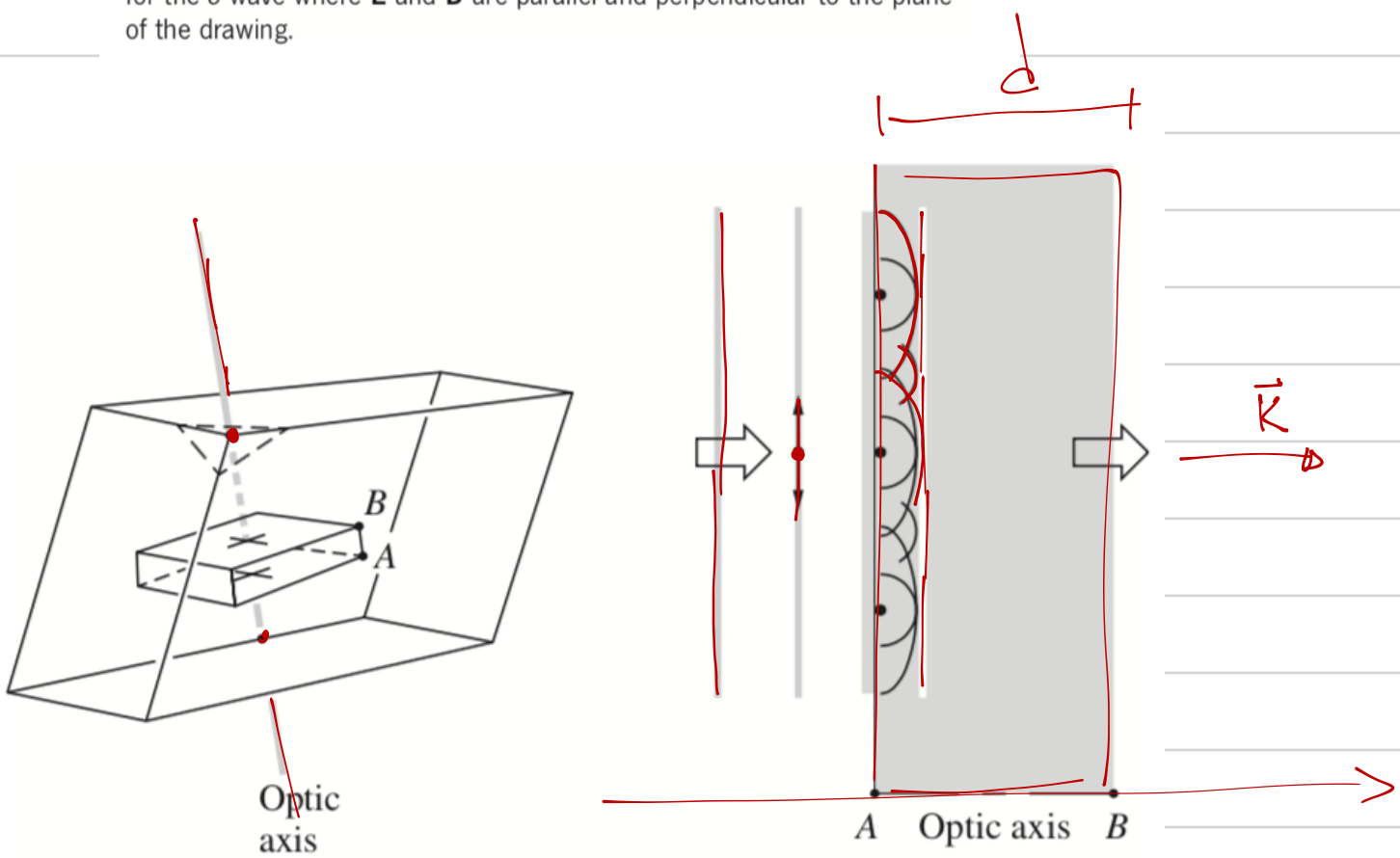
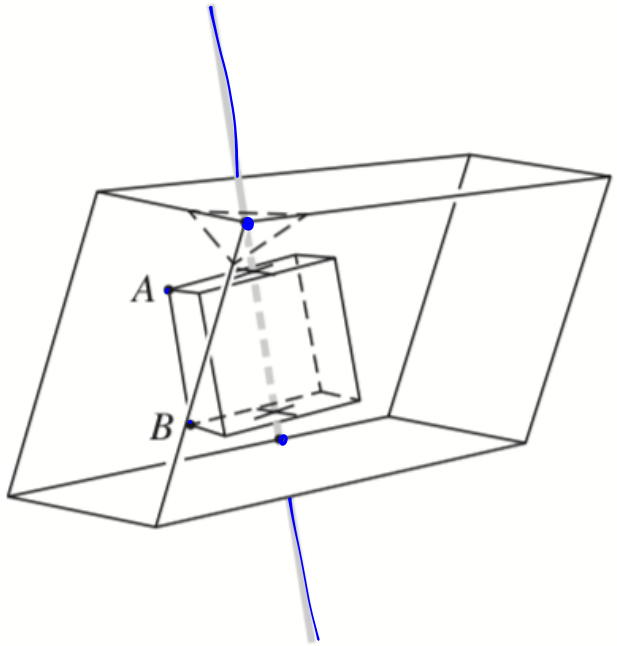


Figure 8.43 A calcite plate cut perpendicular to the optic axis.



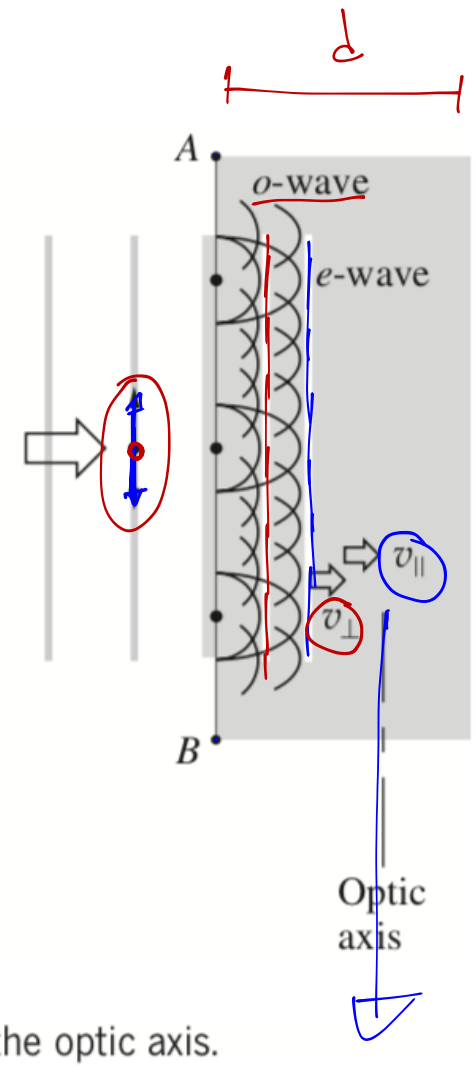


Figure 8.44 A calcite plate cut parallel to the optic axis.

$\Delta\varphi = k_0 \Lambda$ $\quad \Lambda$ = caminho óptico

$$\Delta\varphi = \frac{2\pi}{\lambda_0} d (n_o - n_e)$$

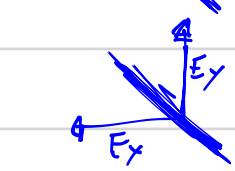
λ_0 = Comp. de onda no vácuo

$\Delta\varphi$ = dif de fase

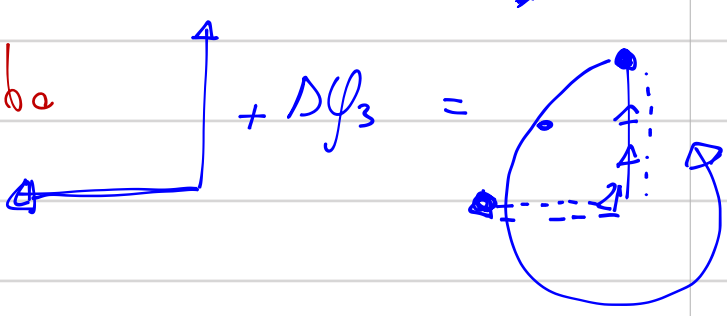
---

① $\Delta\varphi_1 = 2\pi \left(\frac{\lambda}{1}\right) \Rightarrow$ 1 onda $\quad + \Delta\varphi_1 =$

② $\Delta\varphi_2 = \pi \left(\frac{\lambda}{2}\right) \Rightarrow$ meia onda $\quad + \Delta\varphi_2 =$



③ $\Delta\varphi_3 = \pi/2 \left(\frac{\lambda}{4}\right) \Rightarrow$ quarto de onda $\quad + \Delta\varphi_3 =$



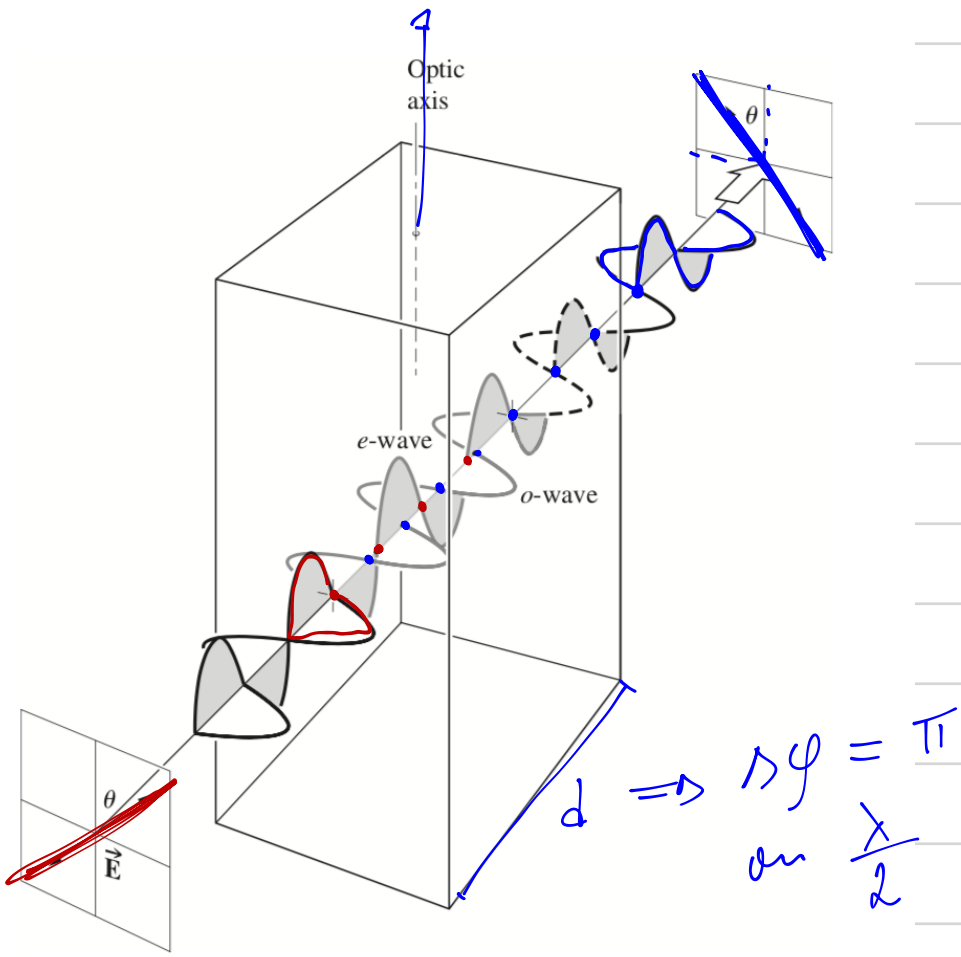


Figure 8.45 A half-wave plate showing how a net phase shift accumulates with the retarder.

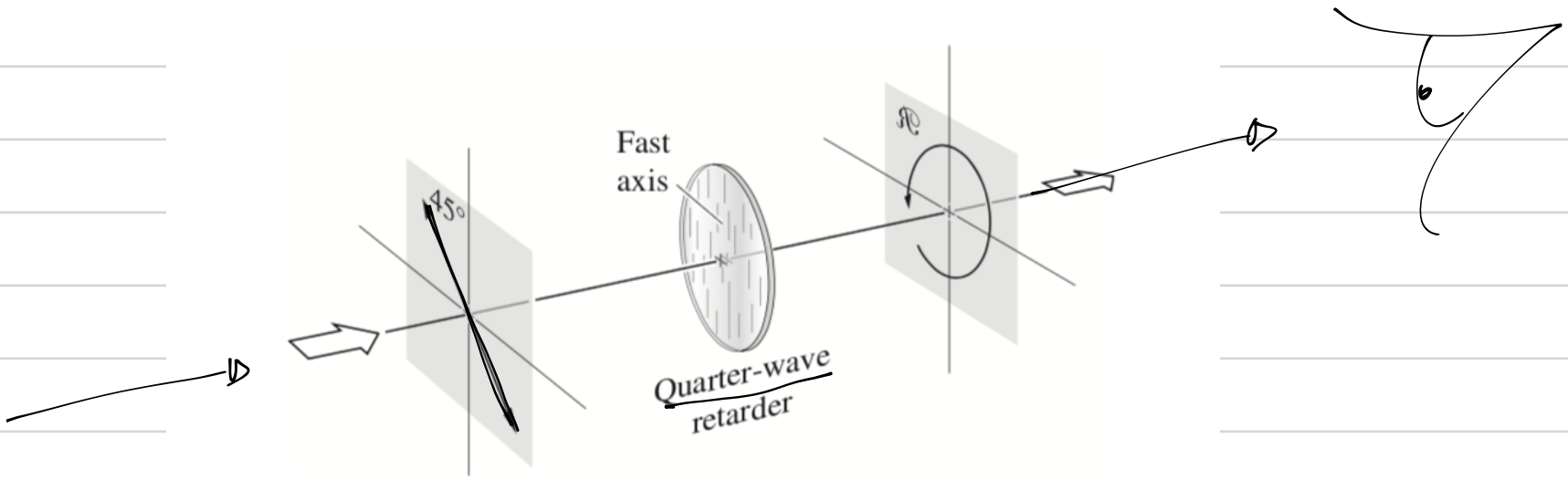


Figure 8.47 After passing through the retarder $\vec{E}_y$ leads $\vec{E}_x$ by $\pi/4$. Thus (from Fig. 8.9) the quarter-wave plate transforms light initially linearly polarized at an angle 45° (oscillating in the first and third quadrants) into right-circular light (rotating clockwise looking toward the source). Notice that the linear light would have to be rotated clockwise to come into alignment with the slow axis (through the smallest angle). Therefore the emergent light rotates clockwise.

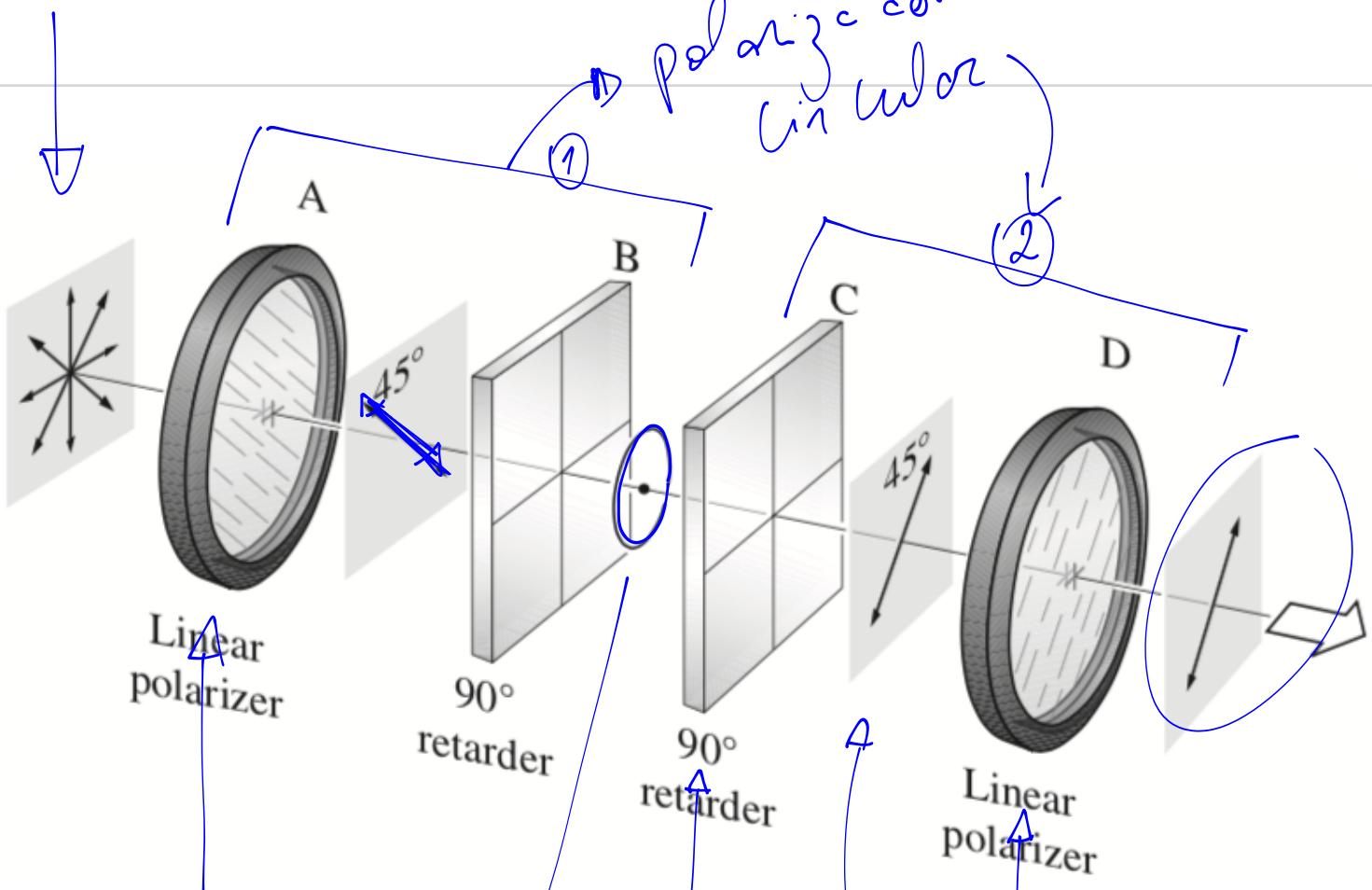
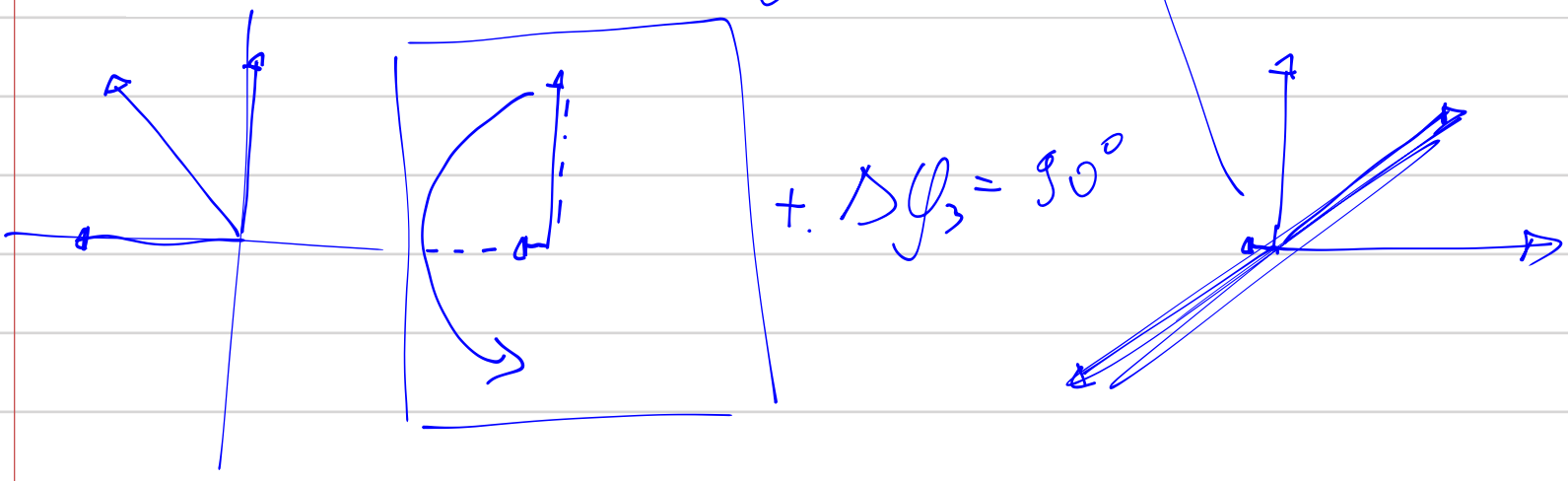


Figure 8.53 Two linear polarizers and two quarter-wave plates.

polarizador circular

①

②



$+\Delta\varphi_3 = 90°$

Lámina de media onda

$$\Delta\varphi = \pi$$

$$\Delta\varphi = (2m+1)\pi = \frac{2\pi}{\lambda_0} d\,|n_o - n_e|$$

$$\boxed{d\,|n_o - n_e| = \frac{\lambda_0}{2}(2m+1)} \qquad m = 0, 1, 2$$

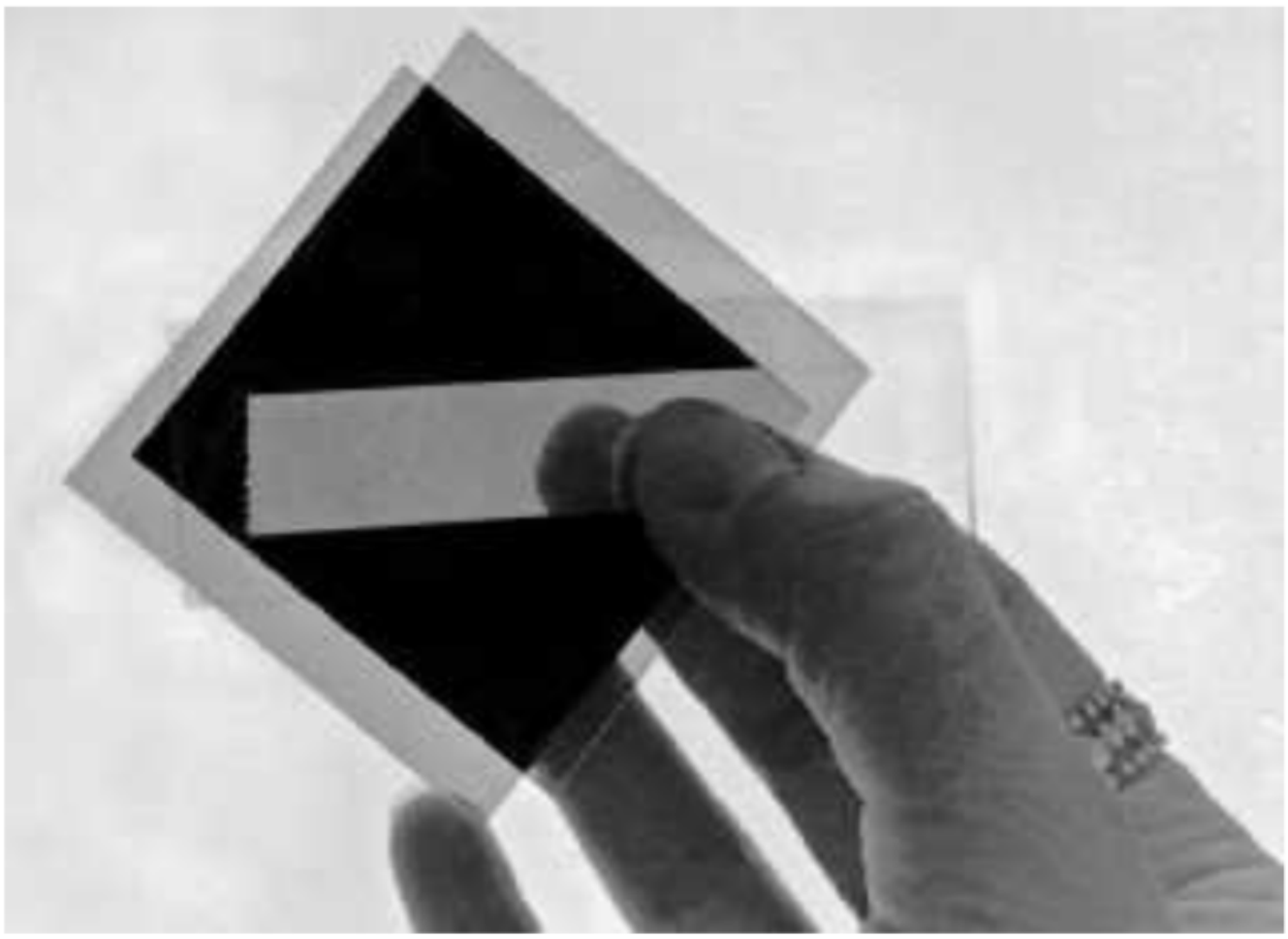
Lâmina quarto de onda

$$\Delta\varphi = \frac{\pi}{2}$$

$$= \left(2m + \frac{1}{2}\right)\pi = \frac{2\pi}{\lambda_0} d\,|n_o - n_e|$$

$$\boxed{d\,|n_o - n_e| = (4m+1)\frac{\lambda_0}{4}}$$

x x



A hand holding a piece of clear cellophane stuck to a microscope slide between two crossed polaroids. (E.H.)