

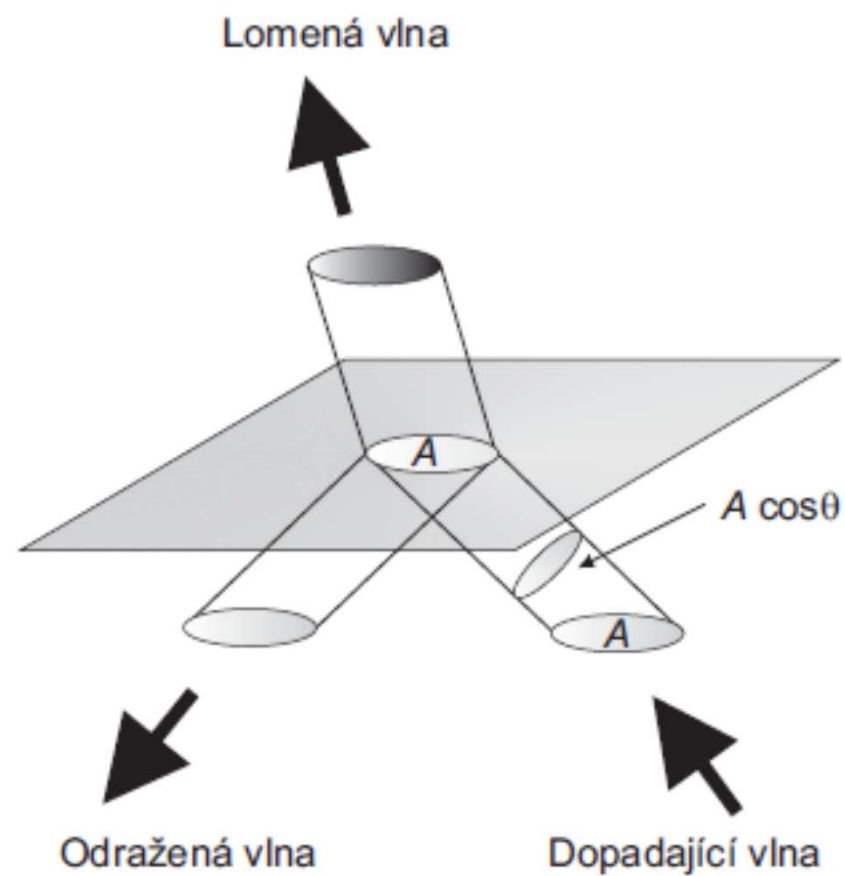
$$r_{\perp} = \frac{E_{0r}^{\perp}}{E_0^{\perp}} = \frac{n_1 \cos \theta - n_2 \cos \theta_t}{n_1 \cos \theta + n_2 \cos \theta_t} \quad r_{\parallel} = \frac{E_{0r}^{\parallel}}{E_0^{\parallel}} = \frac{n_2 \cos \theta - n_1 \cos \theta_t}{n_2 \cos \theta + n_1 \cos \theta_t}$$

$$t_{\perp} = \frac{E_{0t}^{\perp}}{E_0^{\perp}} = \frac{2n_1 \cos \theta}{n_1 \cos \theta + n_2 \cos \theta_2} \quad t_{\parallel} = \frac{E_{0t}^{\parallel}}{E_0^{\parallel}} = \frac{2n_1 \cos \theta}{n_2 \cos \theta + n_1 \cos \theta_2}$$



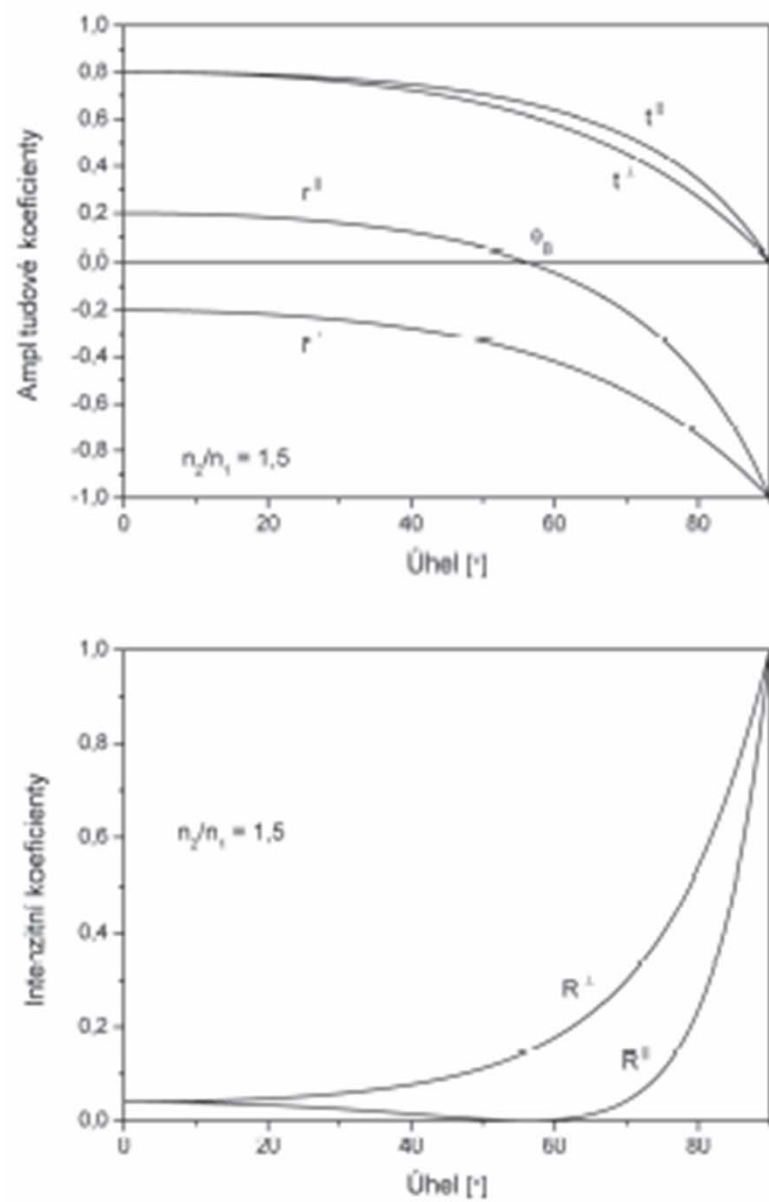
Augustin Fresnel
(1788-1827)

Fresnelovy vzorce

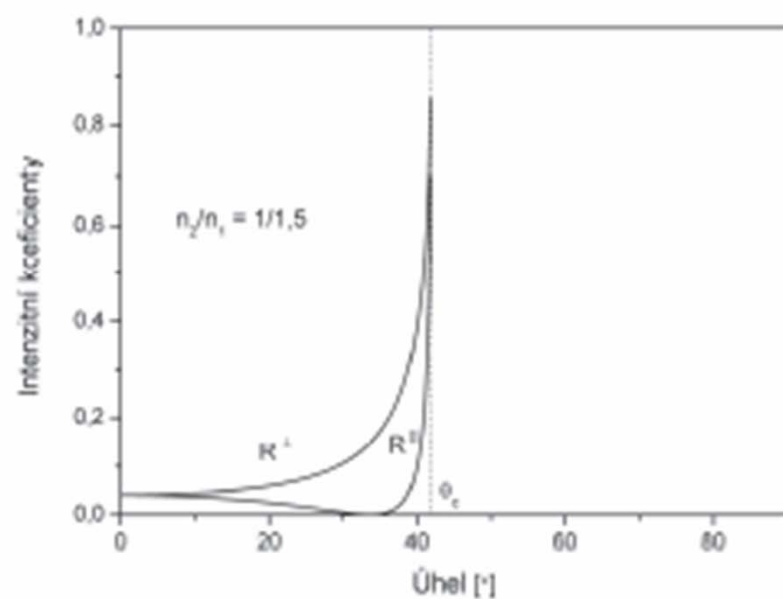
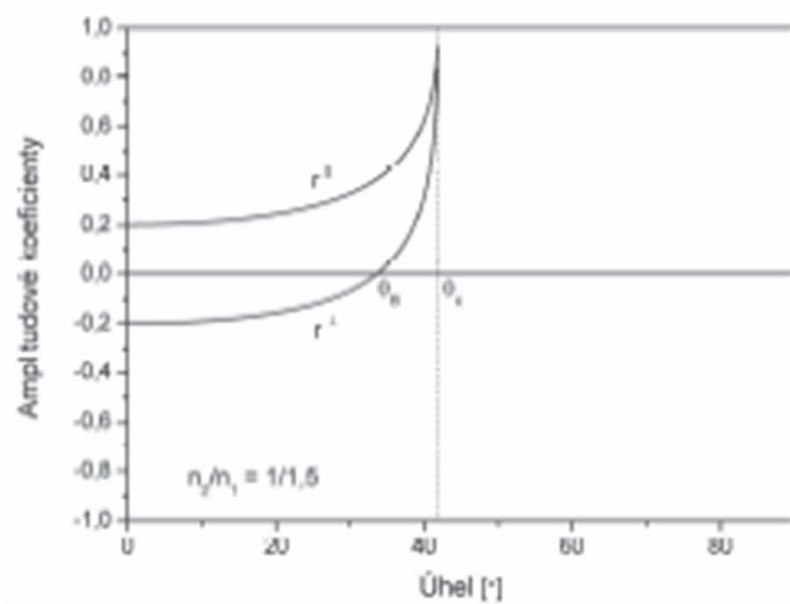


$$R^{\perp,\parallel} = \frac{J_r^{\perp,\parallel}}{J^{\perp,\parallel}} = (r^{\perp,\parallel})^2$$

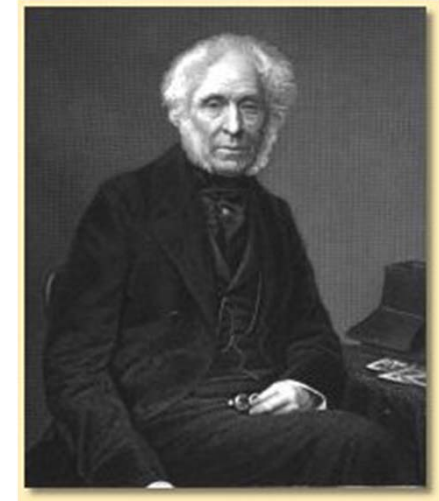
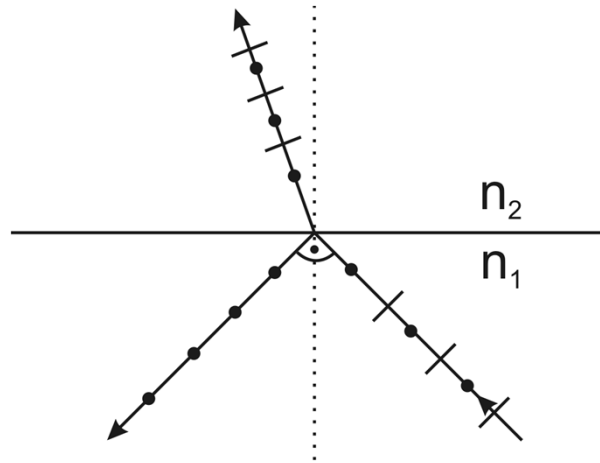
$$T^{\perp,\parallel} = \frac{n_2 \cos \theta_t}{n_1 \cos \theta} (t^{\perp,\parallel})^2$$



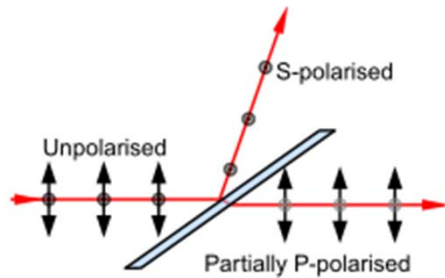
Obr. 3.5 Koeficienty odrazu a propustnosti pro případ $n_2 > n_1$ jako funkce úhlu dopadu



obr. 3.6 Amplitudové koeficienty odrazu pro případ $n_1 > n_2$ jako funkce úhlu dopadu



D. Brewster 1815



Totální odraz

$$\cos \theta_t = \sqrt{1 - \frac{n_1^2}{n_2^2} \sin^2 \theta}$$

$$r^\perp = \frac{E_{0r}^\perp}{E_0^\perp} = \frac{n_1 \cos \theta - i n_2 \sqrt{\frac{n_1^2 \sin^2 \theta}{n_2^2} - 1}}{n_1 \cos \theta + i n_2 \sqrt{\frac{n_1^2 \sin^2 \theta}{n_2^2} - 1}}$$

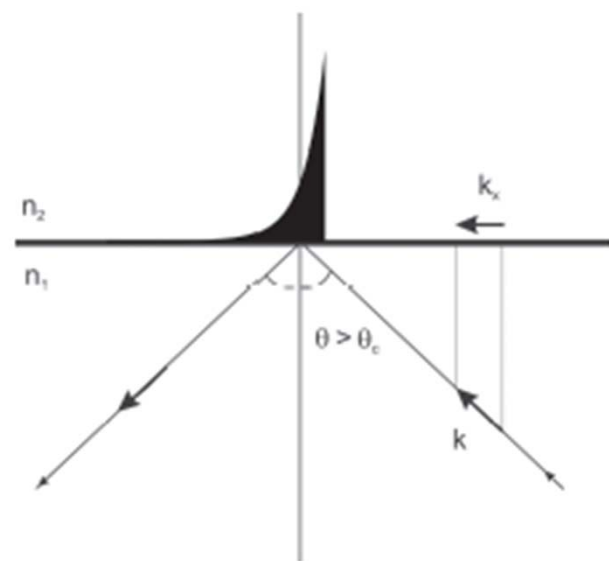
$$\cos \theta_t = i \sqrt{\frac{n_1^2}{n_2^2} \sin^2 \theta - 1}$$

$$|r^\perp| = 1$$

$$\operatorname{tg} \frac{\delta_\perp}{2} = \frac{-n_2 \left(\sqrt{\frac{n_1^2 \sin^2 \theta}{n_2^2} - 1} \right)}{n_1 \cos \theta} = \frac{-\sqrt{n_1^2 \sin^2 \theta - n_2^2}}{n_1 \cos \theta}$$

$$|r^\parallel| = 1$$

$$\operatorname{tg} \frac{\delta_\parallel}{2} = \frac{-n_1 \left(\sqrt{n_1^2 \sin^2 \theta - n_2^2} \right)}{n_2^2 \cos \theta}$$



Obr. 3.8 Znáromění evanescentní vlny, která vzniká při úplném odrazu

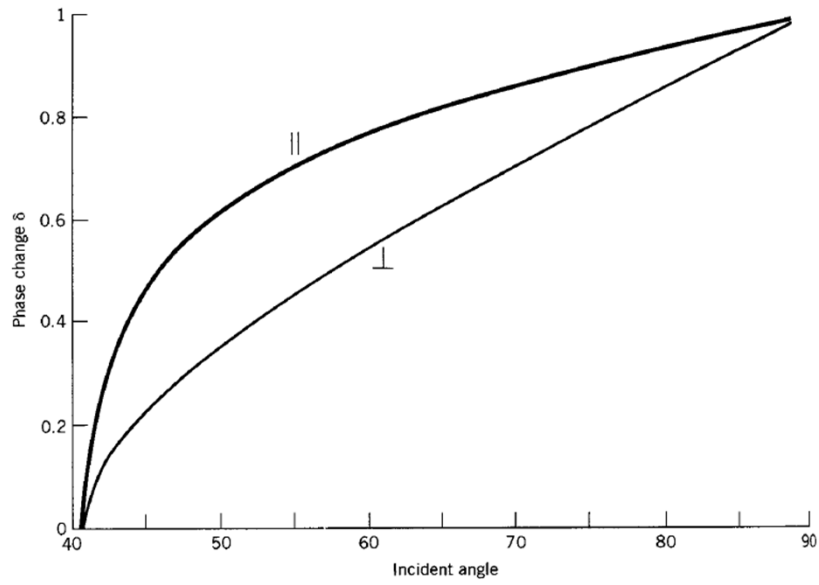
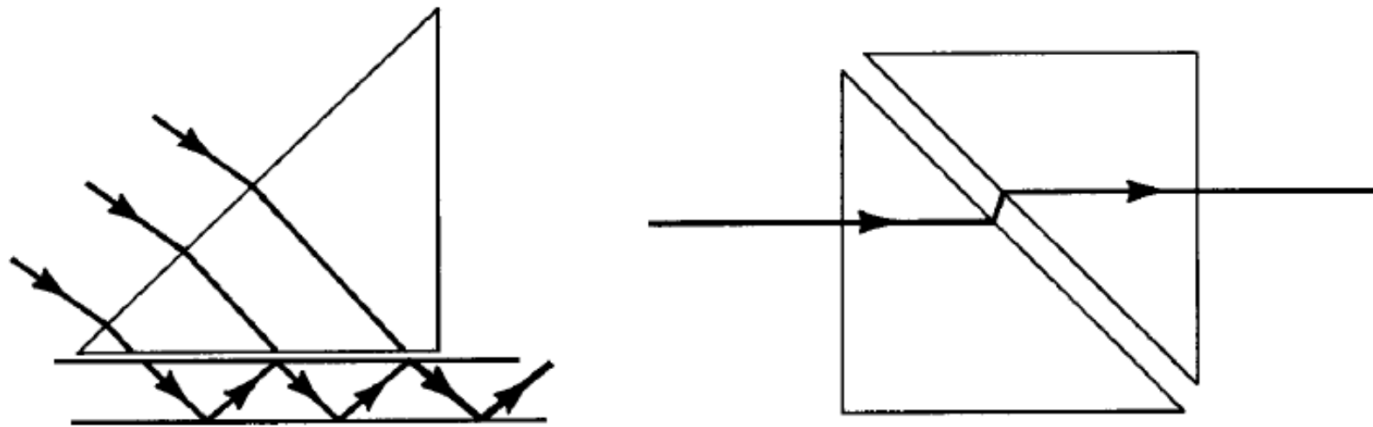
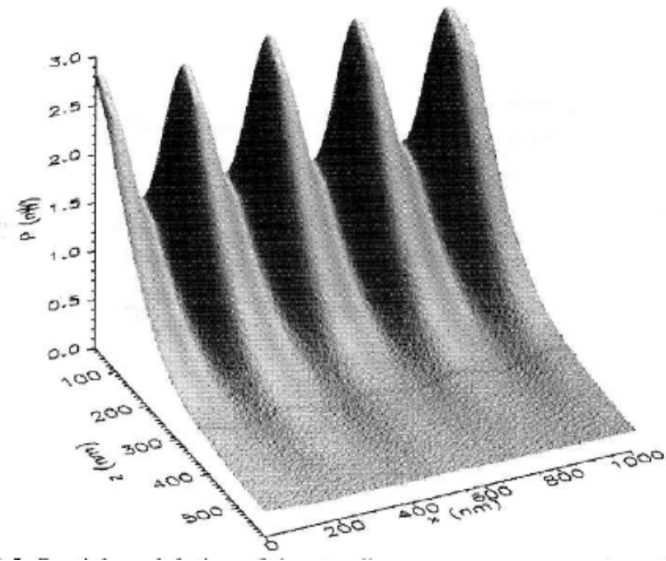
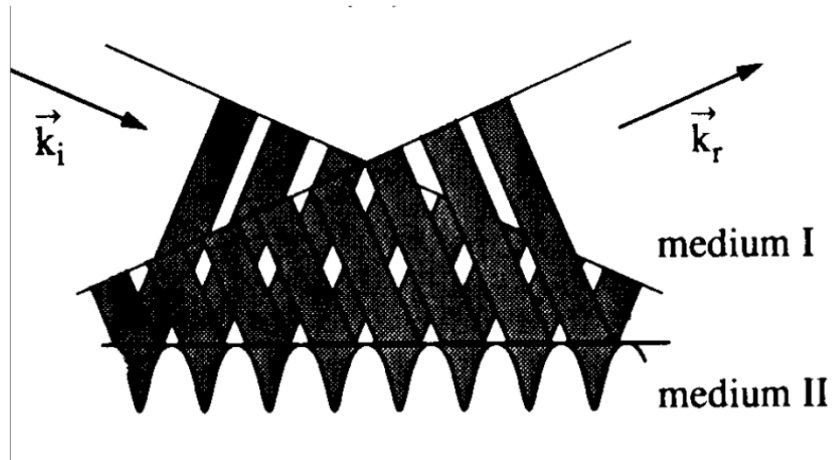
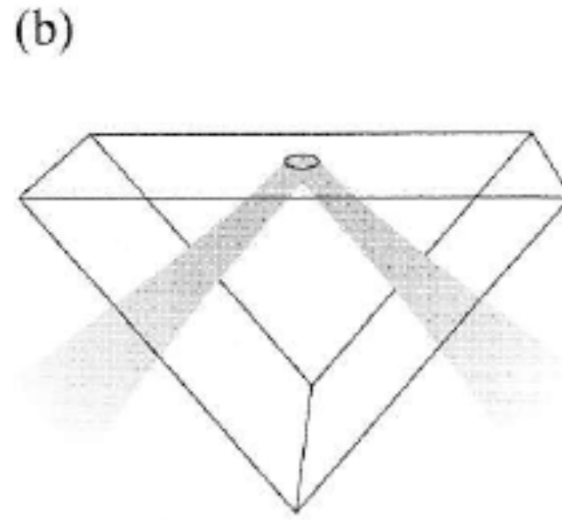
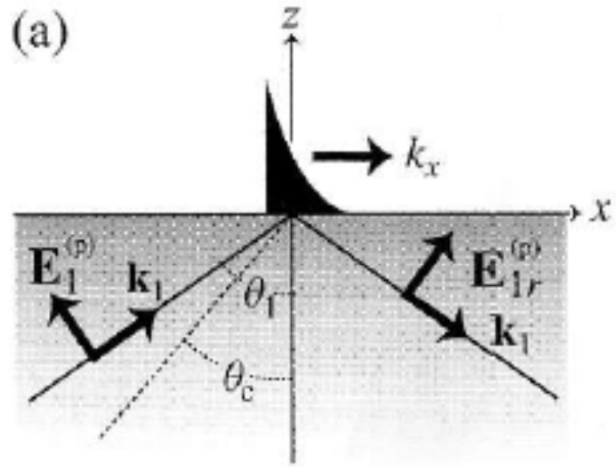
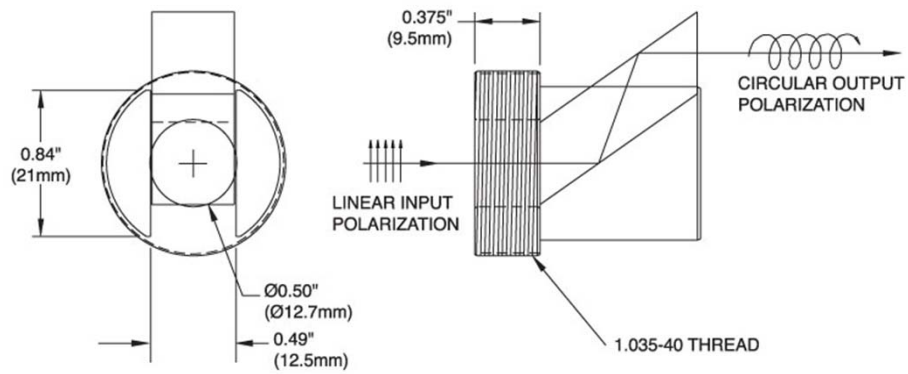
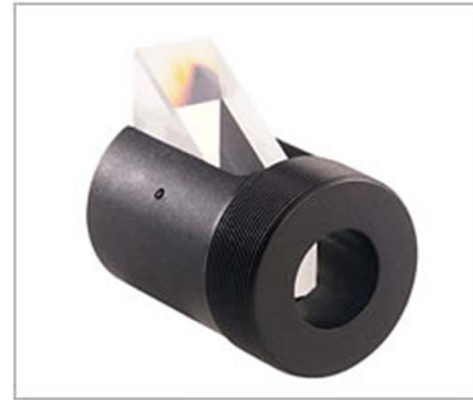
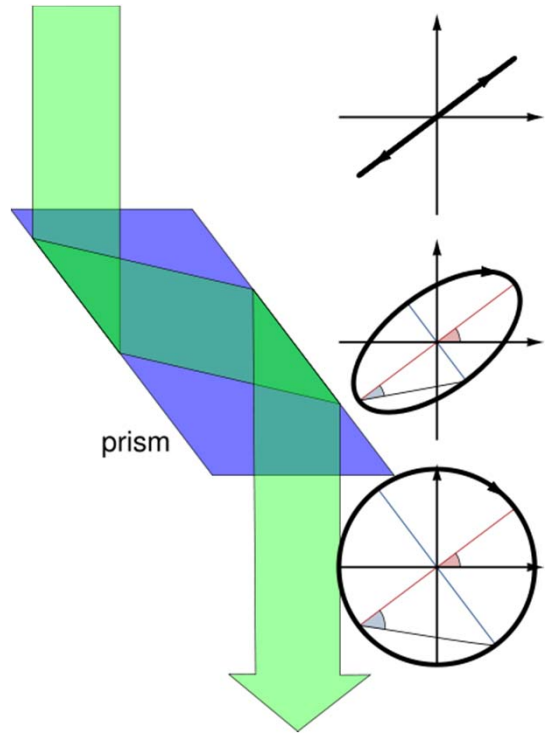


FIGURE 3-13. The phase change upon total reflection for each of the two polarizations. For this calculation, we assumed that the index of the dense medium was 1.5 and the index of the less dense medium was 1.0.







Fresnelův hranol