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Reflection and Transmission, reflection amplitude coefficients:

$$a_{r\parallel} = \frac{\mathcal{E}_{0,r\parallel}}{\mathcal{E}_{0,\alpha\parallel}} = -\frac{\sin(\alpha - \beta)}{\sin(\alpha + \beta)} \quad (1)$$

$$a_{r\perp} = \frac{\mathcal{E}_{0,r\perp}}{\mathcal{E}_{0,\alpha\perp}} = \frac{\tan(\alpha - \beta)}{\tan(\alpha + \beta)} \quad (2)$$

Reflection:

$$A_r = \frac{P_r}{P_\alpha} = \frac{a_{r\perp}^2 \mathcal{E}_{0,\alpha\perp}^2 + a_{r\parallel}^2 \mathcal{E}_{0,\alpha\parallel}^2}{\mathcal{E}_{0,\alpha\perp}^2 + \mathcal{E}_{0,\alpha\parallel}^2} \quad (3)$$

transmission amplitude coefficients:

$$a_{t\parallel} = \frac{\mathcal{E}_{0,t\parallel}}{\mathcal{E}_{0,\alpha\parallel}} = 2 \frac{\sin(\alpha) \sin(\beta)}{\sin(\alpha + \beta)} \quad (4)$$

$$a_{t\perp} = \frac{\mathcal{E}_{0,t\perp}}{\mathcal{E}_{0,\alpha\perp}} = 2 \frac{\sin(\alpha) \sin(\beta)}{\sin(\alpha + \beta) \cos(\alpha - \beta)} \quad (5)$$

Transmission:

$$A_t = \frac{P_t}{P_\alpha} = \frac{a_{t\perp}^2 \mathcal{E}_{0,\alpha\perp}^2 + a_{t\parallel}^2 \mathcal{E}_{0,\alpha\parallel}^2}{\mathcal{E}_{0,\alpha\perp}^2 + \mathcal{E}_{0,\alpha\parallel}^2} \quad (6)$$

$$A_r + A_t = 1$$

Finess (Sharpness, Linedistance, “Halbwärtsbreite”):

$$\mathcal{F} = \frac{4a_r^2}{(1 - a_r^2)^2} = \text{finess coefficient} \quad (7)$$

$$\mathcal{F} = \frac{\pi}{2} \sqrt{\frac{4a_r^2}{(1 - a_r^2)^2}} = \frac{\pi}{2} \sqrt{\mathcal{F}} \quad (8)$$