Formulário

$$\nabla\Psi = \frac{1}{v^2}\frac{\partial^2\Psi}{\partial t^2} \qquad \Psi(x,t) = \vec{A}_0 \sin\left[k\left(x \mp vt\right)\right] = \vec{A}_0 e^{ik(x\mp vt)} \qquad k = \frac{2\pi}{\lambda} \qquad v = \frac{\lambda}{T}$$

$$v = \frac{1}{\sqrt{\varepsilon\mu}} \qquad \nabla.\vec{E} = -\frac{\partial\vec{B}}{\partial t} \qquad \hat{k}\times\vec{E} = v\vec{B} \qquad u_e = \frac{\varepsilon}{2}E^2 \qquad u = \varepsilon E^2 = \frac{1}{\mu}B^2$$

$$\vec{S} = \frac{1}{\mu}\vec{E}\times\vec{B} \qquad I = <S> = \frac{c\varepsilon}{2}E^2 \qquad n = \frac{c}{v} \qquad n^2(\omega) = 1 + \frac{Nq^2}{\varepsilon_0 m}\sum_j\left(\frac{f_j}{\omega_{0j}{}^2 - \omega^2 + i\gamma_j\omega}\right)$$

$$\frac{n^2-1}{n^2+2} = 1 + \frac{Nq^2}{3\varepsilon_0 m}\sum_j\left(\frac{f_j}{\omega_{0j}{}^2 - \omega^2}\right) \qquad n_1 sen\theta_1 = n_2 sen\theta_2 \qquad t = \frac{1}{c}\sum_{i=1}^{m} n_i s_i \qquad R + T = 1$$

$$r_\perp = \frac{E_{0r}}{E_{0i}} = \frac{\frac{n_1}{\mu_1}\cos\theta_i - \frac{n_2}{\mu_2}\cos\theta_t}{\frac{n_1}{\mu_1}\cos\theta_i + \frac{n_2}{\mu_2}\cos\theta_t} \qquad r\,|| = \frac{E_{0r}}{E_{0i}} = \frac{\frac{n_2}{\mu_2}\cos\theta_i - \frac{n_1}{\mu_1}\cos\theta_t}{\frac{n_2}{\mu_2}\cos\theta_i + \frac{n_1}{\mu_1}\cos\theta_t} \qquad R = r^2$$

$$t_\perp = \frac{E_{0t}}{E_{0i}} = \frac{2\frac{n_1}{\mu_1}\cos\theta_i}{\frac{n_1}{\mu_1}\cos\theta_i + \frac{n_2}{\mu_2}\cos\theta_t} \qquad t\,|| = \frac{E_{0t}}{E_{0i}} = \frac{2\frac{n_1}{\mu_1}\cos\theta_i}{\frac{n_2}{\mu_2}\cos\theta_i + \frac{n_1}{\mu_1}\cos\theta_t} \qquad T = \frac{n2\cos\theta_t}{n1\cos\theta_i}t^2$$

$$\frac{n_1}{s_o} + \frac{n_2}{s_i} = \frac{n_2 - n_1}{R} \qquad \frac{1}{s_o} + \frac{1}{s_i} = \frac{1}{f} \qquad \frac{1}{f} = \left[\frac{n_l}{n_m} - 1\right]\left(\frac{1}{R_1} - \frac{1}{R_2}\right) \qquad \frac{1}{f} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{d}{f_1 f_2}$$

$$f_\# = \frac{f}{D} \qquad f = -\frac{R}{2} \qquad M_T = \frac{y_i}{y_o} = -\frac{s_i}{s_o} \qquad M_L = -M_T{}^2$$

$$s_{i2} = \frac{f_2 d - \frac{f_2 s_{o1} f_1}{s_{o1} - f_1}}{d - f_2 - \frac{s_{o1} f_1}{s_{o1} - f_1}} \qquad ffl = \frac{f_1\left(d - f_2\right)}{d - \left(f_1 + f_2\right)} \qquad bfl = \frac{f_2\left(d - f_1\right)}{d - \left(f_1 + f_2\right)}$$

$$\delta = \theta_i + \arcsin\left[\sin\alpha\sqrt{n^2 - \sin^2\theta_i} - \sin\theta_i\cos\alpha\right] - \alpha \qquad n = \frac{\sin\left[\frac{\delta_m + \alpha}{2}\right]}{\sin\left[\frac{\alpha}{2}\right]}$$

$$\theta_c = \arcsin\left(\frac{n_2}{n_1}\right) \qquad NA = \sqrt{n_1{}^2 - n_2{}^2} \qquad \mathscr{D} = \frac{1}{f} \qquad V = \frac{n_Y - 1}{n_B - n_R} \qquad f_{1Y}V_1 + f_{2Y}V_2 = 0$$

$$\frac{1}{f}=[n-1]\left(\frac{1}{R_1}-\frac{1}{R_2}+\frac{(n-1)d}{nR_1R_2}\right) \qquad \overline{H_1V_1}=-\frac{f(n-1)d}{R_2 n} \qquad \overline{H_2V_2}=-\frac{f(n-1)d}{R_1 n}$$

$$\mathscr{D}=\frac{n_t-n_i}{R} \qquad \begin{bmatrix} n_2\alpha_2 \\ y_2 \end{bmatrix}=[\ ]\begin{bmatrix} n_1\alpha_1 \\ y_1 \end{bmatrix} \qquad \mathscr{R}=\begin{bmatrix} 1 & -\mathscr{D} \\ 0 & 1 \end{bmatrix} \qquad \mathscr{T}=\begin{bmatrix} 1 & 0 \\ d/n & 1 \end{bmatrix} \qquad \mathscr{A}=\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$$

$$a_{12}=-\frac{1}{f} \qquad \overline{V_1H_1}=\frac{n_O(1-a_{11})}{-a_{12}} \qquad \overline{V_2H_2}=\frac{n_I(a_{22}-1)}{-a_{12}} \qquad \overline{H_{11}H_1}=\frac{fd}{f_2} \qquad \overline{H_{22}H_2}=-\frac{fd}{f_1}$$

$$\mathrm{v}=\frac{\omega}{k} \qquad \mathrm{v_g}=\frac{\partial\omega}{\partial k} \qquad \mathrm{v_g}=\mathrm{v}+k\frac{d\mathrm{v}}{dk} \qquad \mathrm{v_g}=\mathrm{v}\left[1+\frac{k}{n}\frac{dn}{dk}\right]$$

$$I=I_0\cos^2(\theta) \qquad V=\frac{\mathrm{I_{pol}}}{\mathrm{I_{\tilde{n}\,pol}}+\mathrm{I_{pol}}} \qquad V=\frac{\mathrm{I_{max}}-\mathrm{I_{min}}}{\mathrm{I_{max}}+\mathrm{I_{min}}} \qquad \mathscr{S}=\begin{bmatrix} \mathscr{S}_0 & I \\ \mathscr{S}_1 & \leftrightarrow \\ \mathscr{S}_2 & \swarrow\!\!\nearrow \\ \mathscr{S}_3 & \circlearrowright \end{bmatrix} \qquad V=\frac{\sqrt{\mathscr{S}_1^{\,2}+\mathscr{S}_2^{\,2}+\mathscr{S}_3^{\,2}}}{\mathscr{S}_0}$$

$$I=I_1+I_2+2\sqrt{I_1I_2}\cos(\delta) \qquad \delta=k_0\Lambda \qquad F=\frac{4R}{(1-R)^2} \qquad \gamma=\frac{4}{\sqrt{F}} \qquad \mathcal{F}=\frac{separação}{largura}$$

$$\frac{I_{reflectida}}{I_{incidente}}=\frac{F\sin^2(\delta/2)}{1+F\sin^2(\delta/2)} \qquad \frac{I_{transmitida}}{I_{incidente}}=\frac{1}{1+F\sin^2(\delta/2)}=A(\delta)$$

$$\Delta y=\frac{s}{a}\lambda \qquad d=\frac{\lambda_f}{4};\ n_f^{\ 2}=n_o\cdot n_s$$

$$z>>\frac{4b^2}{\lambda};\ I\propto\mathscr{F}^2\{g\} \qquad g=\Pi(b);\ I=I_0\mathrm{Sinc}^2\left(\frac{\pi bx}{\lambda z}\right) \qquad I=I_0\mathrm{Sinc}^2\left(\frac{\pi bx}{\lambda z}\right)\left(\frac{\sin\left(\frac{N\pi ax}{\lambda z}\right)}{\sin\left(\frac{\pi ax}{\lambda z}\right)}\right)$$

$$r_{first\ zero}=0{,}61\frac{\lambda f}{a} \qquad I=I_0\left(\frac{\sin\left(\frac{N\pi d\sin\theta}{\lambda}\right)}{\sin\left(\frac{\pi d\sin\theta}{\lambda}\right)}\right) \qquad d\sin\theta=n\lambda$$