Képletgyűjtemény – ZH1, v. 2019-10-22

$\tilde{\mathbf{E}}(\mathbf{r},t) = \tilde{\mathbf{E}}_\mathbf{0} \cdot e^{i(\omega t - \mathbf{kr})}$ $\quad \tilde{n} \equiv n - \mathrm{i} \cdot \kappa$

$\tilde{k} \equiv k_{re} - ik_{im}$ $\quad k_{re} = k_0 \cdot n$ $\quad k_{im} = k_0 \cdot \kappa$ $\quad k_0 \equiv \frac{2\pi}{\lambda_0}$

$\langle \mathbf{S}(\mathbf{r},T) \rangle = \frac{\mathbf{k_{re}}}{\mu\omega} \frac{|\mathbf{E_0}|^2}{2} e^{-2\mathbf{k_{im}r}}$ $\quad I \equiv |\langle \mathbf{S}(\mathbf{r},T) \rangle|$ $\quad I(z) = I_0 \cdot e^{-2k_{im}z}$ $\quad \delta \equiv \frac{1}{k_{im}}$

$E_x(\mathbf{r}) \equiv E_0 \cdot u(x,y,z) \cdot e^{-ikz}$ $\quad u(x,y,z) = \frac{w_0}{w} \cdot e^{-\left(\frac{r}{w}\right)^2} \cdot e^{-ik\frac{r^2}{2R}} \cdot e^{i\varphi}$

$w(z) = w_0 \sqrt{1 + \left(\frac{z}{z_R}\right)^2}$ $\quad R(z) = z\left[1 + \left(\frac{z_R}{z}\right)^2\right]$ $\quad \varphi(z) = \arctan\left(\frac{z}{z_R}\right)$

$z_R \equiv \frac{\pi w_0^2}{\lambda}$ $\quad \theta_d = \frac{\lambda}{\pi w_0}\ [\mathrm{rad}]$

$n \sin\theta = n' \sin\theta'$ $\quad \left.\frac{dOPL}{d\xi}\right|_{\xi=\xi_0} = 0$

$\tau_s = \frac{2n\cdot\cos\theta}{n\cdot\cos\theta + n'\cdot\cos\theta'}$ $\quad \tau_p = \frac{2n\cdot\cos\theta}{n'\cdot\cos\theta + n\cdot\cos\theta'}$ $\quad T = |\tau|^2 \cdot \frac{n'\cos\theta'}{n\cos\theta}$

$\rho_s = \frac{n\cdot\cos\theta - n'\cdot\cos\theta'}{n\cdot\cos\theta + n'\cdot\cos\theta'}$ $\quad \rho_p = \frac{n'\cdot\cos\theta - n\cdot\cos\theta'}{n'\cdot\cos\theta + n\cdot\cos\theta'}$ $\quad R = |\rho|^2$ $\quad R + T = 1$

$\rho_s = \frac{1+i\gamma}{1-i\gamma} = e^{i\varphi_s}$ $\quad \rho_p = \frac{1+i\gamma\left(\frac{n}{n'}\right)^2}{1-i\gamma\left(\frac{n}{n'}\right)^2} = e^{i\varphi_p}$ $\quad \gamma \equiv i\frac{k_{z'}}{k_z} = \frac{\sqrt{n^2\sin^2\theta - n'^2}}{n\cos\theta}$

$k_z{}' = 0 - ik_z\gamma$ $\quad k'_{im} = k_z\gamma$

$f_2 = r_2 \frac{n_2}{n_2 - n_1}$ $\quad P_2 \equiv \frac{n_2}{f_2} = \frac{r_2}{n_2 - n_1}$ $\quad \frac{n'}{s'} = \frac{n'}{f'} + \frac{n}{s}$

$m_L = \frac{n'}{n} m^2$ $\quad \frac{n'}{n} m_\alpha \cdot m = 1$ $\quad \frac{n}{f} = -\frac{n'}{f'}$ $\quad P = P_1 + P_2 - P_1 P_2 \frac{d_1}{n_1}$

$\mathbf{R_2} = \begin{bmatrix} 1 & 0 \\ -P_2 & 1 \end{bmatrix}$ $\quad \mathbf{T_1} = \begin{bmatrix} 1 & \frac{d_1}{n_1} \\ 0 & 1 \end{bmatrix}$ $\quad \mathbf{M} = \mathbf{T}_N \cdot \mathbf{R}_N \cdot \ldots \cdot \mathbf{T}_2 \cdot \mathbf{R}_2 \cdot \mathbf{T}_1$

$z' = (1 - A)\frac{n'}{C}$ $\quad z = (D - 1)\frac{n}{C}$
