

Képletgyűjtemény – ZH1, v. 2019-10-30

$$\tilde{\mathbf{E}}(\mathbf{r}, t) = \tilde{\mathbf{E}}_0 \cdot e^{i(\omega t - \mathbf{k}\mathbf{r})} \quad \tilde{n} \equiv n - i \cdot \kappa$$

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

$$\langle \mathbf{S}(\mathbf{r}, T) \rangle = \frac{\mathbf{k}_{re} |\mathbf{E}_0|^2}{\mu\omega} e^{-2k_{im}\mathbf{r}} \quad I \equiv |\langle \mathbf{S}(\mathbf{r}, T) \rangle| \quad I(z) = I_0 \cdot e^{-2k_{im}z} \quad \delta \equiv \frac{1}{k_{im}}$$

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

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

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

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

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

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

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

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

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

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

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

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