

Mar 16, 2016

$$\frac{1}{d} \int_0^d R^M(x) dx$$

$$\delta_0 = 8\pi \left( \frac{d_z}{\lambda_0} \right) W_e \rightarrow \alpha x$$

$$\alpha = 8\pi \frac{W_e}{\lambda_0}$$

$$\overline{R^M} \propto \frac{1}{d} \int_0^d e^{i\delta_0} dx = \frac{1}{d} \int_0^d e^{i\alpha x} dx$$

$$\begin{aligned} \frac{1}{d} \frac{e^{i\alpha x}}{i\alpha} \Big|_0^d &= \frac{1}{i\alpha d} (e^{i\alpha d} - 1) = \frac{1}{i\delta} (e^{i\delta} - 1) \\ &= \frac{1}{i\delta} e^{i\delta/2} \left( \frac{e^{i\delta/2} - e^{-i\delta/2}}{2i} \right) 2i \end{aligned}$$

$$\overline{R_i^M} = \frac{R_i^{eb} e^{i\delta/2}}{1 + R_i^{vx} R_i^{eb} e^{i\delta}} \text{sinc}(\delta/2)$$

$$= \frac{2}{\delta} e^{i\delta/2} \sin(\delta/2)$$