

Corrections for Lecture & Notes

At the bottom of page (4)

The function form of Guoy phase should be

\tan^{-1} (or arctan) instead of \tan

that is

$$\left[\begin{array}{l} \phi(z_{i+1}) = \tan^{-1}\left(\frac{z_{i+1}}{z_0}\right) \\ \phi(z_i) = \tan^{-1}\left(\frac{z_i}{z_0}\right) \end{array} \right]$$

The example given should be corrected as

Example: symmetric cavity

first leg: $\Delta\phi_1 = \tan^{-1}\left(\frac{z_2}{z_0}\right) - \tan^{-1}\left(\frac{z_1}{z_0}\right)$

z_1 & z_2 : mirror locations; $z_1 = -\frac{d}{2}$, $z_2 = +\frac{d}{2}$

$$\Delta\phi_1 = 2 \tan^{-1}\left(\frac{d}{2z_0}\right)$$

2nd leg: $\Delta\phi_2 = \tan^{-1}\left(\frac{z_1}{z_0}\right) - \tan^{-1}\left(\frac{z_2}{z_0}\right)$

but relative to reflected beam.

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$$z_1 = +\frac{d}{z} \text{ (mirror after focus)}$$

$$z_2 = -\frac{d}{z} \text{ (mirror before focus)}$$

$$\Delta \phi_2 = 2 \tan^{-1} \left(\frac{d}{2z_0} \right) = \Delta \phi_1$$

$$\text{so } \Delta \phi = 4 \tan^{-1} \left(\frac{d}{2z_0} \right)$$