

So, in terms of the variable ξ ,

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cont.

the rays oscillate about the axis of the Selfoc. The rate (wave number) for oscillation ^{in terms of z} depends on the amplitude because of the relation

$$\xi = [n_0^2 - 2K]^{-1/2} z$$

It is easy to check that

$$p_x = \dot{x} = \omega A_x \cos(\omega \xi + \phi_x) \text{ etc } \Rightarrow$$

$$K = \frac{p_x^2 + p_y^2}{2} + \frac{\omega^2}{2} (x^2 + y^2) = \frac{\omega^2}{2} (A_x^2 + A_y^2) \Rightarrow$$

$$[n_0^2 - 2K]^{-1/2} = [n_0^2 - \omega^2 (A_x^2 + A_y^2)]^{-1/2}$$