LIGO-T890041-00-R

#68

~~List of 4/06/89~~

SUMMARY OF CONTRAST CHANGES AS A FUNCTION OF MISALIGNMENT OF TWO GAUSSIAN BEAMS IN THE TE_{00} MODE

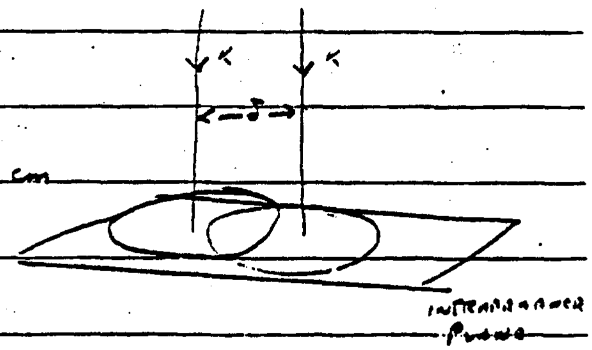
by R. Weiss

(received 03/14/89, EJF)

1) TWO BEAMS WITH EQUAL w, $k_{\approx}$ $\mathcal{E}(0)$, $\hat{r}$ $R(z)$

DISPLACED BY A DISTANCE δ.

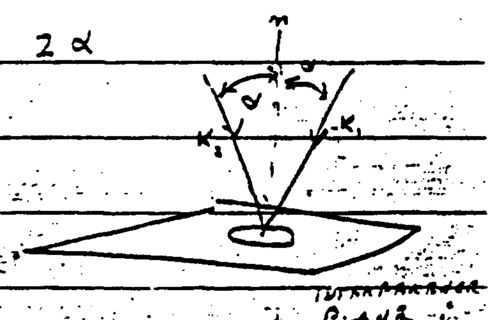
$$C = e^{-\frac{1}{2}\frac{\delta^2}{w^2(z)}}\, e^{-\frac{1}{8}\left(\frac{K\delta w(z)}{R(z)}\right)^2}$$



FOR 1% $R=\infty$: $\frac{\delta}{w(z)} \le 8.2\times10^{-2}$

FOR 1% $R \neq \infty$, $\lambda = \frac{1}{2}\mu$: $\frac{\delta\, w(z)}{R(z)} \le 2.36\times10^{-6}$ cm

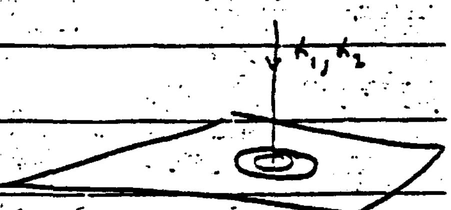
2) TWO BEAMS WITH EQUAL w, $\mathcal{E}(0)$, $R(z)$ BUT $\hat{K}$ DIFFERENT COMING TOGETHER AT z AT AN ANGLE 2α



$$C = e^{-\frac{(K\alpha w(z))^2}{2}}$$

FOR 1% $\lambda = \frac{1}{2}\mu$: $\alpha\, w(z) \le 1.13\times10^{-6}$ cm radian

3) TWO BEAMS COMING TOGETHER WITH EQUAL K, $\mathcal{E}(0)$, $R(z)$ BUT DIFFERENT $w(z)$: w AND $w+\Delta w$



$$C = 1 - e^{-\frac{1}{2}\left(\frac{\Delta w}{w}\right)^2}$$

FOR 1% $\frac{\Delta w}{w} \le 1.42\times10^{-1}$

IF $R_1 \neq R_2$

$$C = e^{-\frac{1}{2}\left(\frac{\Delta R}{2R}\right)^2}$$