

$$= \frac{c^2}{2} (1+a^2) \cos 2\pi f_0 z + a \frac{c^2}{2} \cos 2\pi f_0 r_0 \cos 2\pi f_0 z$$

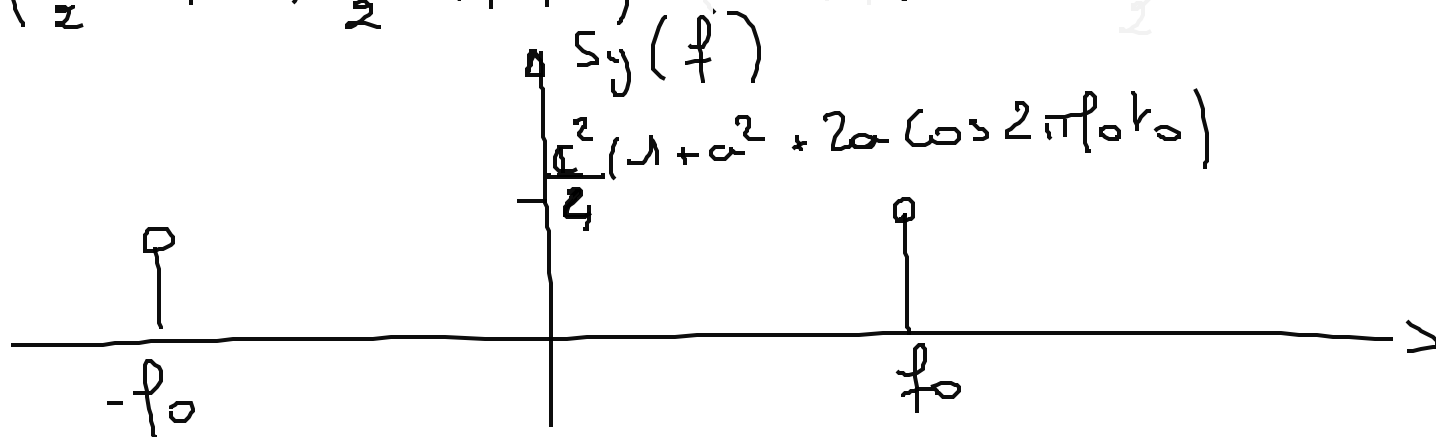
$$C_y(z) = \frac{c^2}{2} \cos 2\pi f_0 z (1+a^2 + 2a \cos 2\pi f_0 r_0)$$

$$\begin{aligned} \cos(a-b) + \cos(a+b) \\ = 2 \cos a \cos b. \end{aligned}$$

$$\begin{aligned} S_y(f) &= \text{TF}(C_y(z)) \\ &= \frac{c^2}{2} \text{TF}(\cos 2\pi f_0 z) * \text{TF}(1+a^2+2a \cos 2\pi f_0 r_0) \end{aligned}$$

const independent of z

$$= \frac{c^2}{2} \left(\frac{1}{2} \delta(f-f_0) + \frac{1}{2} \delta(f+f_0) \right) \cdot (1+a^2+2a \cos 2\pi f_0 r_0)$$



$$\begin{aligned} P_y &= \int S_y(f) df = \frac{c^2}{2} (1+a^2+2a \cos 2\pi f_0 r_0) \\ &= C_y(0) < \infty \end{aligned}$$