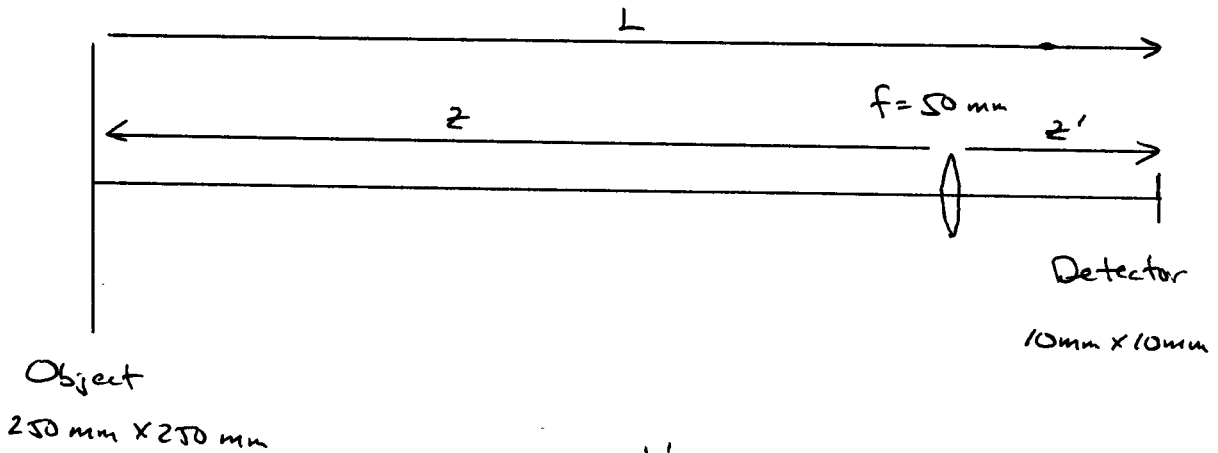


Imaging - Exact and Approximate



$$m = \frac{h'}{h} = -\frac{10 \text{ mm}}{250 \text{ mm}} = -0.04$$

Thin Lens: $f = 50 \text{ mm}$ $f_F = -50 \text{ mm}$ $f_R' = 50 \text{ mm}$

Exact:

$$z = f_F \left(1 - \frac{1}{m}\right)$$

$$z' = f_R' (1 - m)$$

$$z = -1300 \text{ mm}$$

$$z' = 52 \text{ mm}$$

$$L = z' - z = \underline{1352 \text{ mm}}$$

Approx:

$$m = \frac{z'}{z} \approx \frac{f}{z}$$

$$z \approx \frac{f}{m} = -1250 \text{ mm}$$

$$z' \approx f = 50 \text{ mm}$$

$$L = z' - z = \underline{1300 \text{ mm}}$$