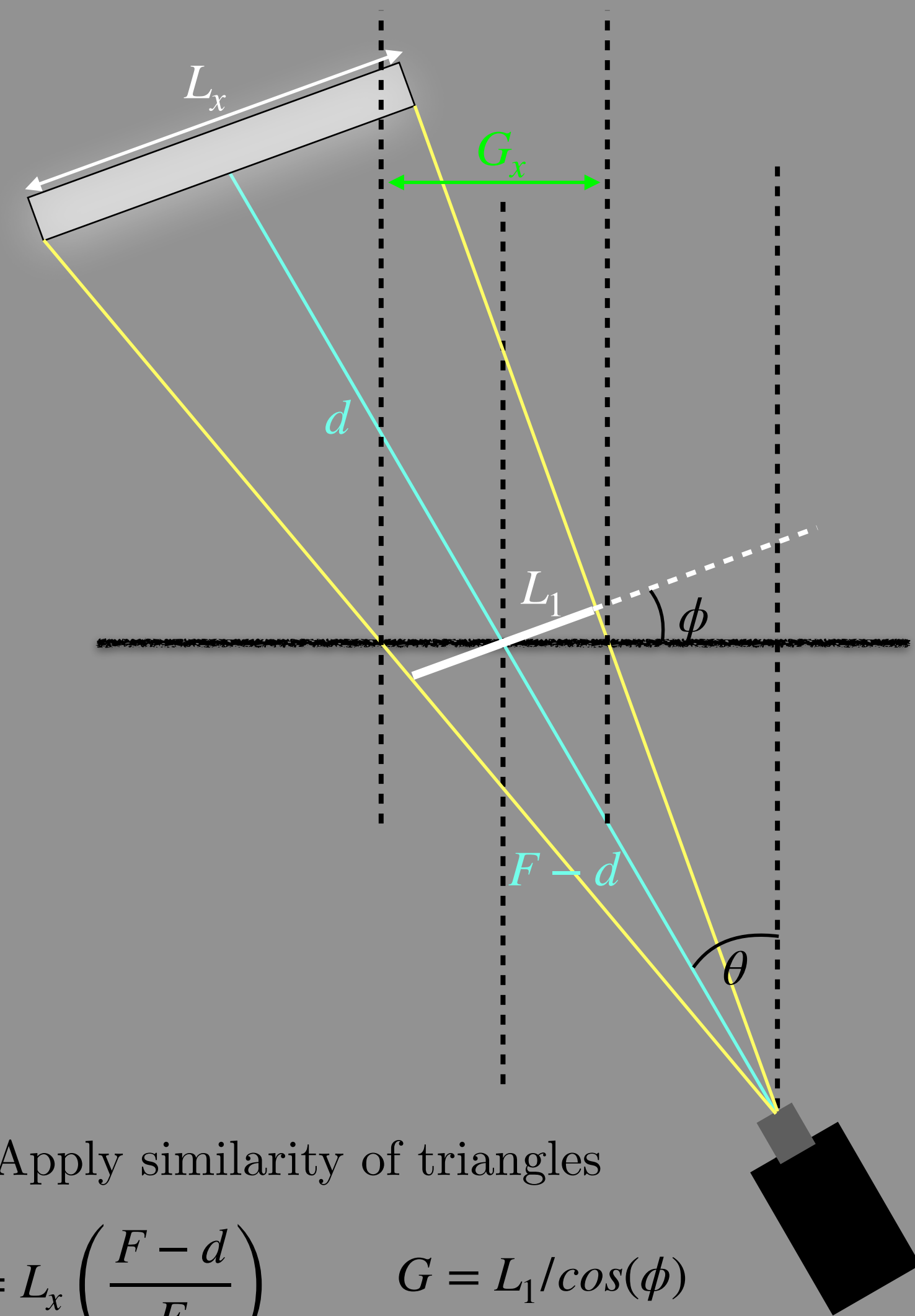
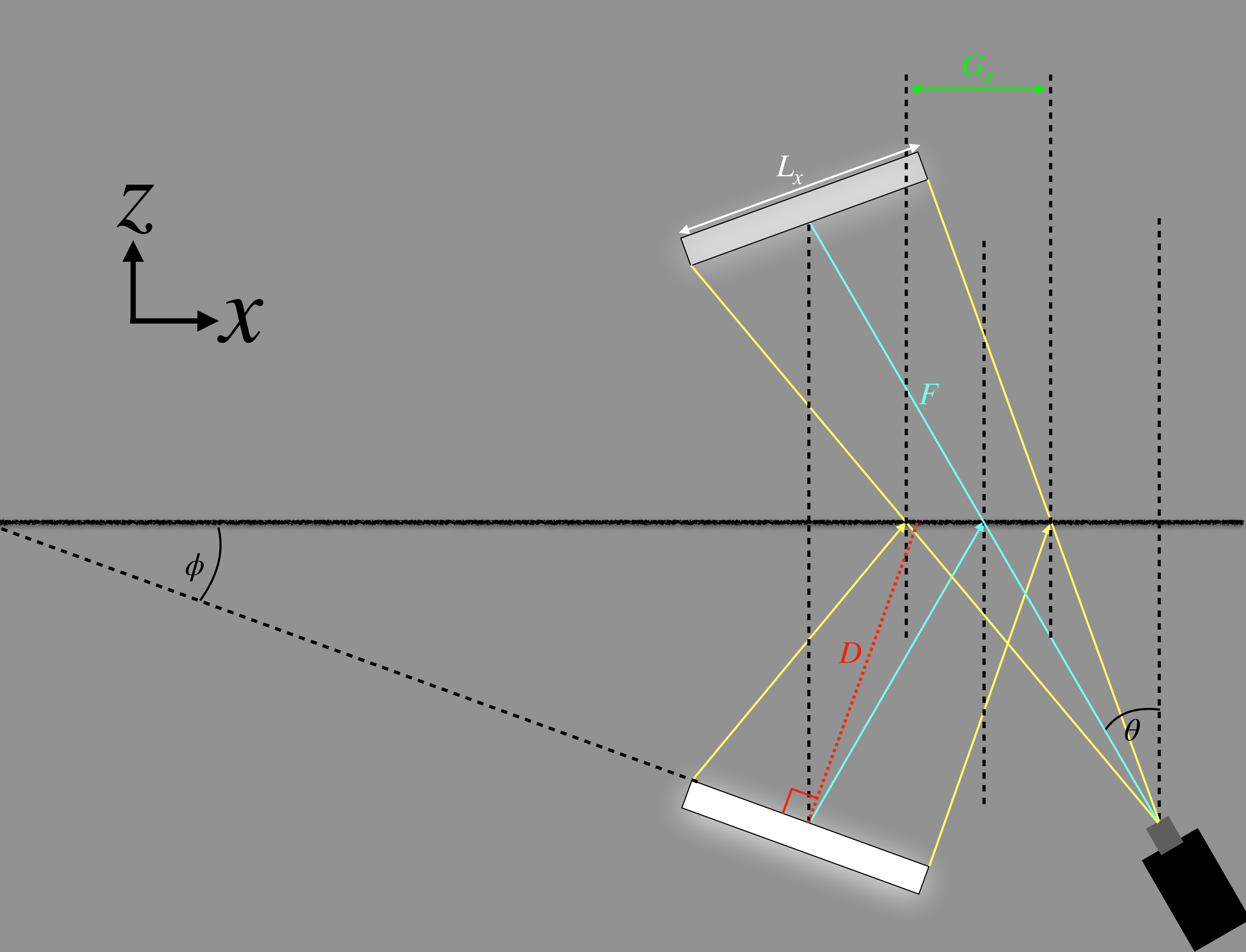


Apply sine rule

$$\frac{d}{\sin(\pi/2 + \phi)} = \frac{D}{\sin(\pi/2 - \theta)}$$

$$d = \frac{D \sin(\pi/2 + \phi)}{\sin(\pi/2 - \theta)}$$

$$d = \frac{D \cos(\phi)}{\cos(\theta)}$$

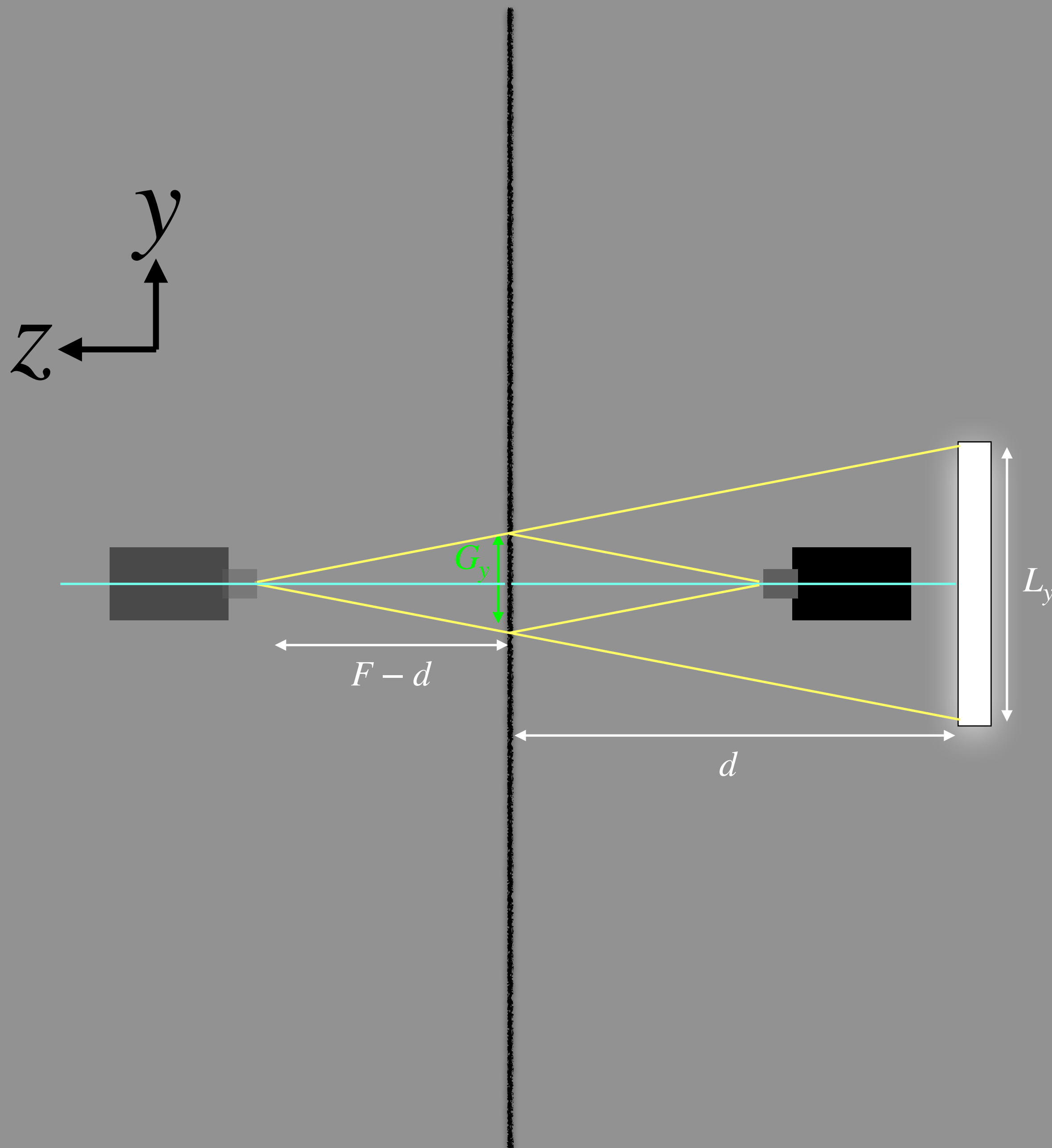


Apply similarity of triangles

$$L_1 = L_x \left(\frac{F - d}{F} \right) \quad G = L_1 / \cos(\phi)$$

$$G_x = \frac{L_x}{\cos(\phi)} \left(\frac{F - d}{F} \right)$$

$$G_x = \frac{L_x}{\cos(\phi)} \left(1 - \frac{D \cos(\phi)}{F \cos(\theta)} \right)$$



Apply similarity of triangles

$$G_y = L_y \left(1 - \frac{d}{F} \right)$$

$$G_y = L_y \left(1 - \frac{D \cos(\phi)}{F \cos(\theta)} \right)$$

Conclusion: Instead of full dimension of light source, better to use L_x , L_y (in SI units or cm or mm) as the grating size in x , y directions respectively and use G_x , G_y as the wavelength (in pixels) of the carrier waves of the reference image

$$\text{Scale}_x = \frac{L_x}{G_x} = \frac{\cos(\phi)}{\left[1 - \frac{D \cos(\phi)}{F \cos(\theta)}\right]}$$

$$\text{Scale}_y = \frac{L_y}{G_y} = \frac{1}{\left[1 - \frac{D \cos(\phi)}{F \cos(\theta)}\right]}$$