



$$\sin(\alpha) = \frac{x}{d}$$

small angle approx. $\sin(\alpha) \approx \alpha$

$$\alpha = \frac{x}{d}$$

$$\alpha^2 = \frac{x^2}{d^2} = \frac{A}{d^2}$$

We assume constant surface density of stars.

$$c = \frac{\# \text{ stars}}{A}$$

$$A = \frac{\# \text{ stars}}{c}$$

$$\Rightarrow \alpha^2 = \frac{\# \text{ stars}}{c d^2}$$

$$d = \sqrt{\frac{\# \text{ stars}}{\alpha^2 c}}$$

$$d \propto \sqrt{\# \text{ stars}}$$