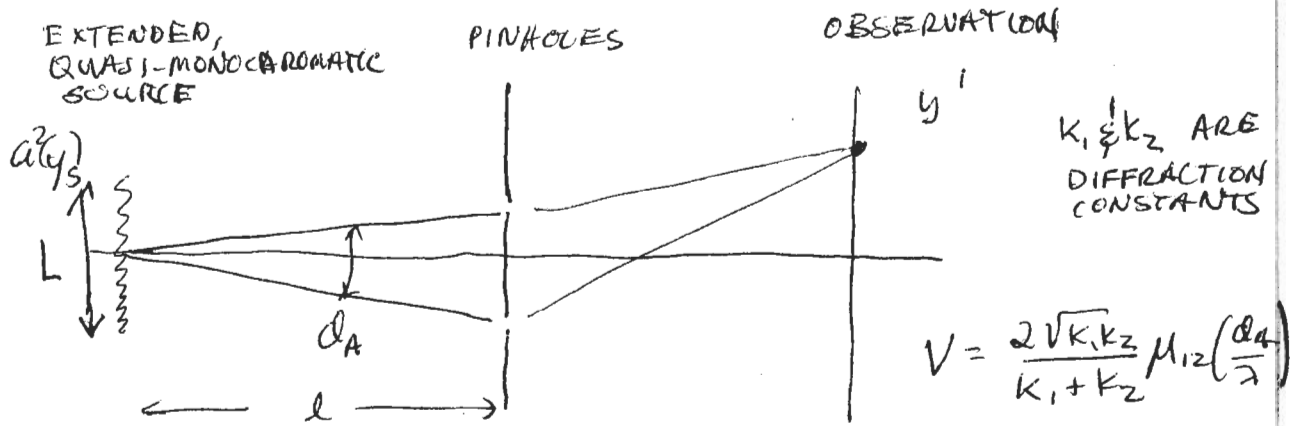


Van Cittert Zernike

(SPATIAL COHERENCE)



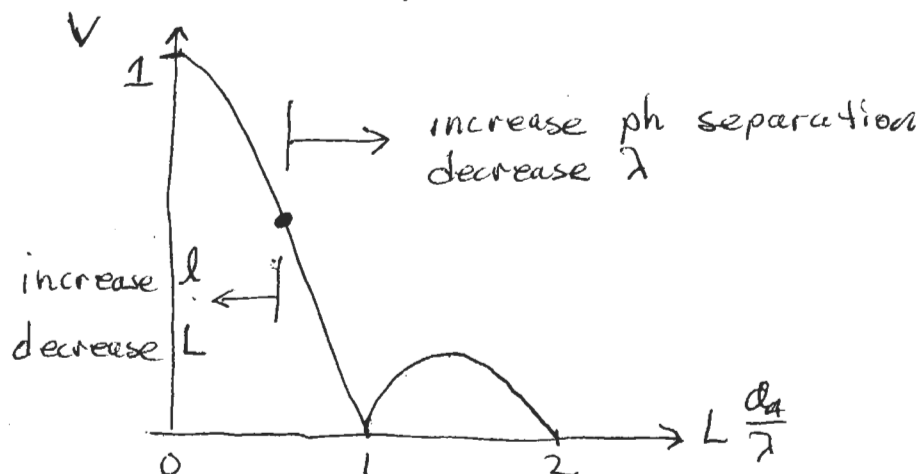
$$\mu_{12}(\frac{\Delta_A}{\lambda}) = \left| \frac{F[a^2(y_s)]_{\Delta_A/\lambda}}{I_L} \right|$$

$$I_L = \int_{\text{SOURCE}} a^2(y_s) dy_s$$

- Visibility does not depend on observation-space parameters.
- Reduce $\Delta_A \rightarrow$ Increase V

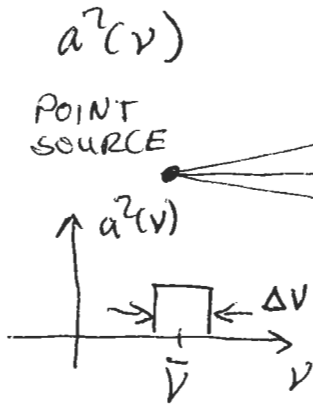
If $a^2(y_s) = \text{rect}(\frac{y_s}{L})$

$$V = \left| \text{sinc}\left(L \frac{\Delta_A}{\lambda}\right) \right|$$



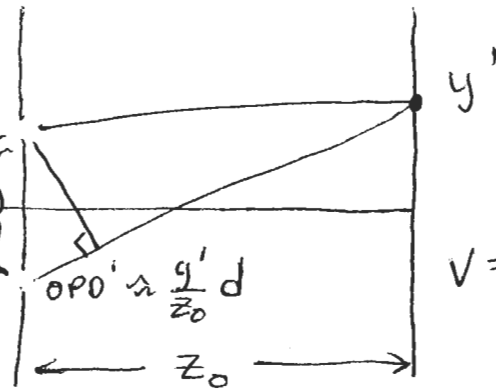
Temporal Coherence

POWER SPECTRUM



PINHOLES

OBSERVATION



k_1, k_2 ARE DIFFRACTION CONSTANTS

$$V = \frac{2\sqrt{k_1 k_2}}{k_1 + k_2} m_{12} \left(\frac{OPD'}{c} \right)$$

$$c = 3 \times 10^8 \text{ m/s}$$

$$m_{12} \left(\frac{OPD'}{c} \right) = \left| \frac{F[a^2(v)]_{\frac{OPD'}{c}}}{I_W} \right|$$

$$I_W = \int_{-\infty}^{\infty} a^2(v) dv$$

- Visibility is a function of observation-space parameters

- Reduce $\Delta v \rightarrow$ Increase V

If $a^2(v) = \text{rect} \left(\frac{v - \bar{v}}{\Delta v} \right)$

$$V = \left| \text{sinc} \left(\Delta v \frac{OPD'}{c} \right) \right|$$

