

SEIDEL
ABERRATIONS
[1857]

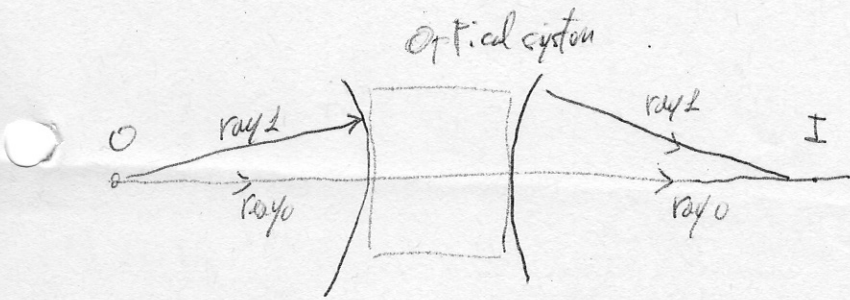
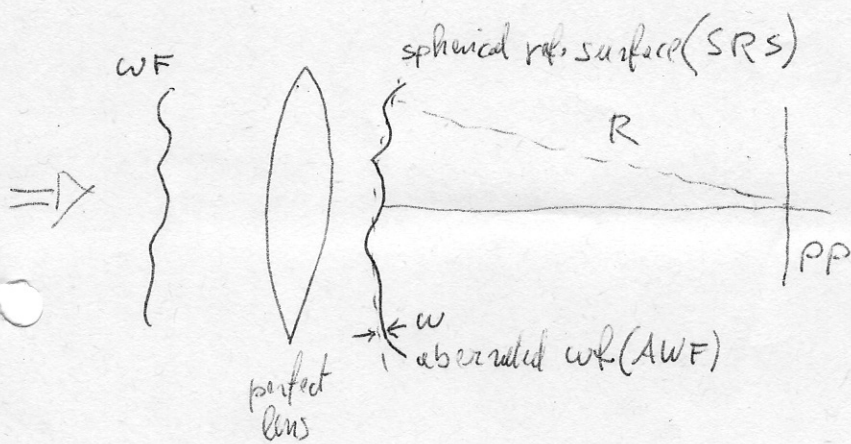


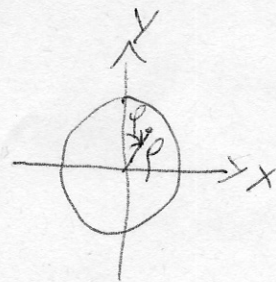
Fig (7.25) either

OPL de O ad I constante \forall ray \Rightarrow convergent sphere

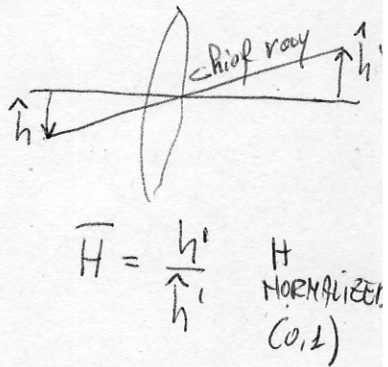


$W = \text{OPD length } R$

$$W = W(x, y) \equiv \sum_{ijk} W_{ijk} \cdot \bar{H}_p^i \cos^k \varphi$$



- W_{ijk} = wf aberration coefficient ≥ 0
- \bar{H}_p^i is the "normalized" image height $0 < \bar{H}_p^i < 1$
- $\varphi = \text{angle}$
- $\cos^k \varphi$



Seidel aberration $\Rightarrow i+j=4$ (Fig 7.19)

defocus $W_d = W_{020} \cdot p^2$

spherical $W_s = W_{040} p^4$

coma $W_c = W_{131} \bar{H} p^3 \cos \varphi$

astig. $W_a = W_{222} \bar{H}^2 p^2 \cos^2 \varphi$

curv. of campo Petzval curv. $W_p = W_{220} \bar{H}^2 p^2$

distortion $W_{d.r} = W_{311} \bar{H}^3 p \cos \varphi$

} PSF quality

} off axis point position