

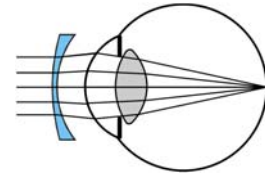


Ögats optik, föreläsning 10 Ögats bild- och synkvalitet



Del 3: Repetition av monokromatiska aberrationer

Korrektion av ögats optik



Refraktiva fel:

Glasögon

Monokromatiska aberrationer

- Kontaktlinser
- Refraktiv kirurgi
- Intraokulära linser (IOL)

Monokromatiska aberrationer

Seidel aberrationer

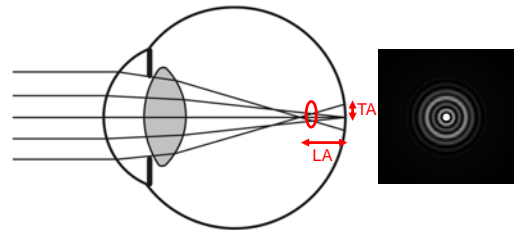
Strålar bryter enligt $n \cdot \sin(i) = n' \cdot \sin(i')$, men vi räknar oftast med $n \cdot i = n' \cdot i'$

- Sfärisk aberration (spherical ab)
- Koma (coma)
- Sned astigmatism (oblique ast.)
- Bildfältskrökning (field curvature)
- Distorsion (distortion)

Seidel aberrationer

TA för sfärisk aberration $\sim \text{pupill}^3$

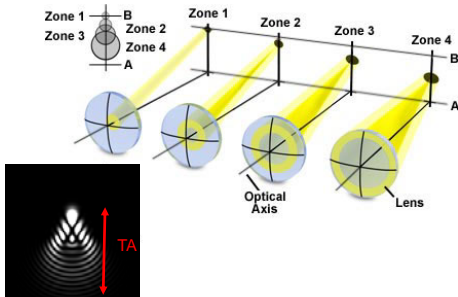
TA=transversell aberration (suddighet på näthinnan)



Positiv sfärisk aberration

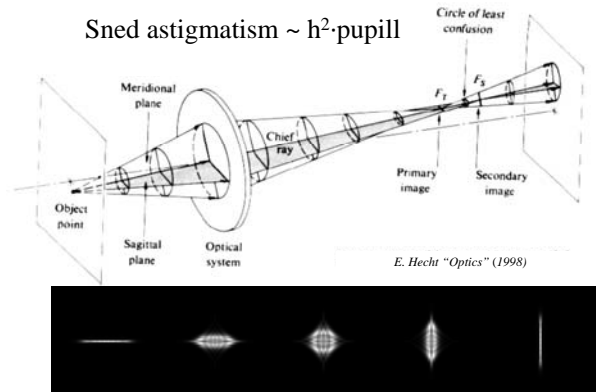
Seidel aberrationer

TA för Koma $\sim h \cdot \text{pupill}^2$



Seidel aberrationer

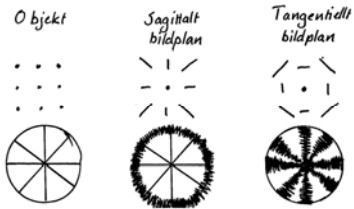
Sned astigmatism $\sim h^2 \cdot \text{pupill}$



E. Hecht "Optics" (1998)

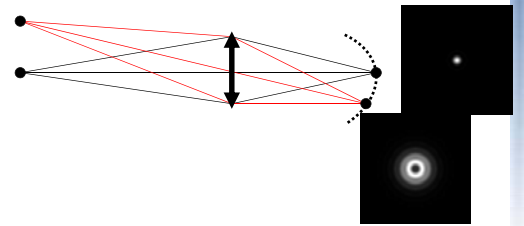
Seidel aberrationer

Sned astigmatism $\sim h^2 \cdot \text{pupill}$



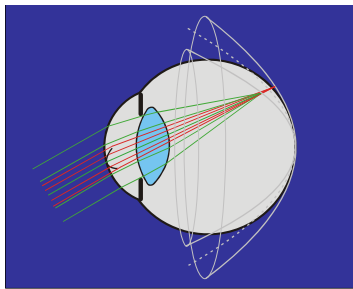
Seidel aberrationer

Bildfältskrökning $\sim h^2 \cdot \text{pupill}$



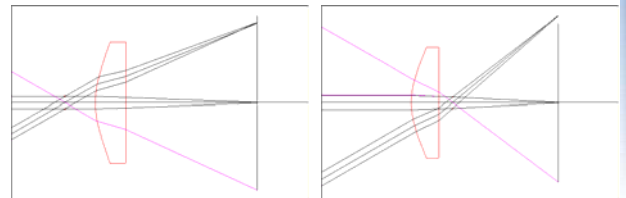
Seidel aberrationer

Bildfältskrökning + astigmatism $\sim h^2 \cdot \text{pupill}$

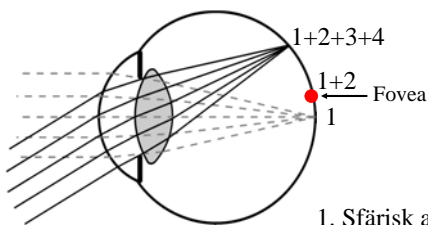


Seidel aberrationer

Distorsion $\sim h^3$



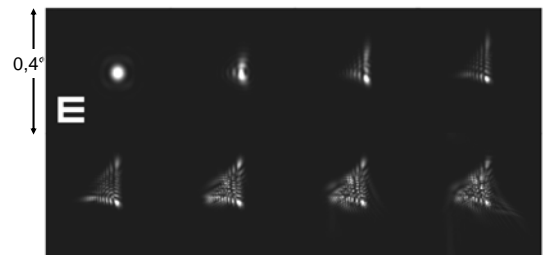
Seidel aberrationer i ögat



1. Sfärisk aberration
2. Koma
3. Sned astigmatism
4. Bildfältskrökning
5. Distorsion

Seidel aberrationer i ögat

Ögats bildkvalitet ändras med pupillstorlek



Pupilldiameter: 1- 8 mm