

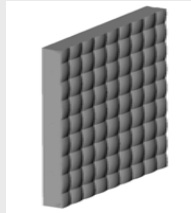
Suss Mask Aligner “MO”

Proposal for Novel Illumination System/Lamphouse:

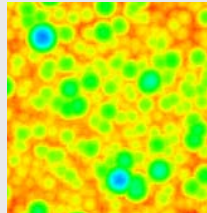
- Reduced Alignment Tolerances
- Higher Resolution for Proximity Printing
- More Light
- High-End „Vario Optics“ for Flexible Diffraction Reduction

Technical Concept - Overview

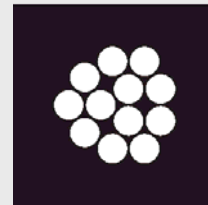
Homogenizer
No 1



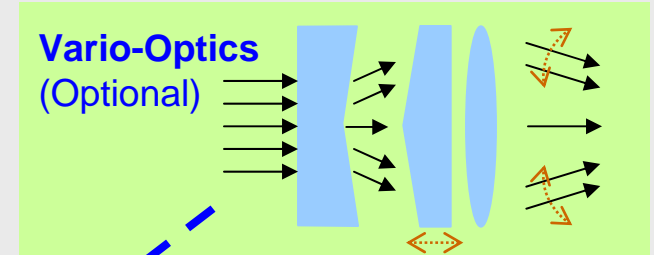
Diffuser



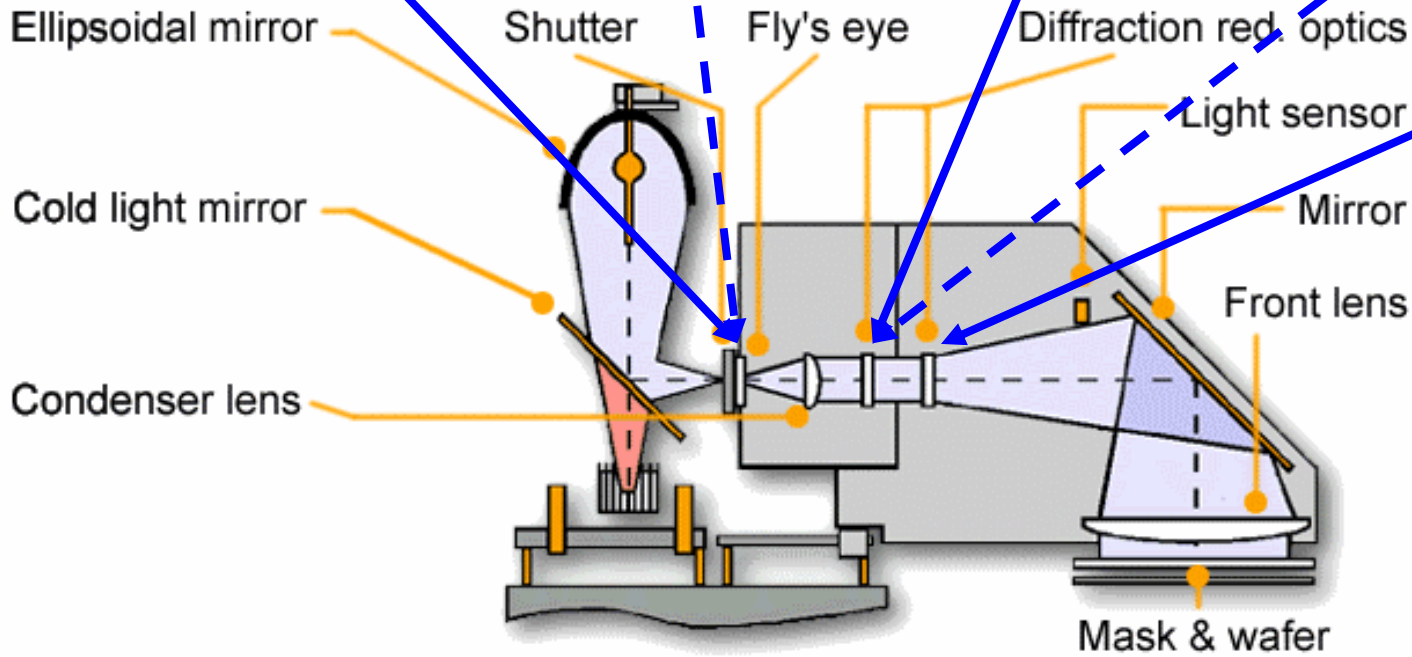
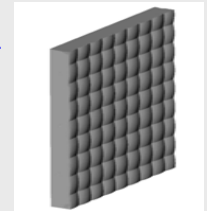
Aperture



Vario-Optics
(Optional)



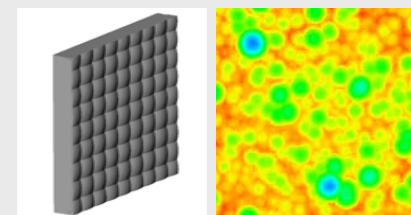
Homogenizer No 2



Components

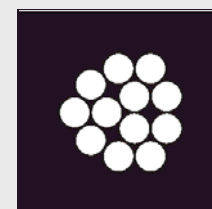
■ Microlens Homogenizer A (Option: 1D-Random Diffuser)

- Light mixing and homogenizing
- Angular distribution is independent from incidence
- +30-40% light, no loss outside optical channel



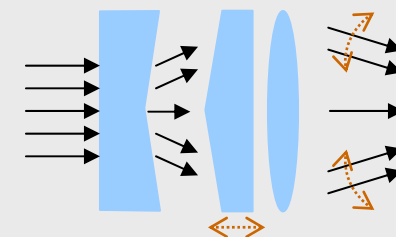
■ Standard A-, D-Optics Plate - but no lenses (!)

- Diffraction reduction as usual



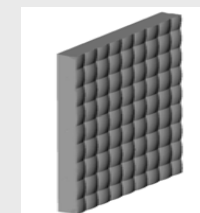
■ (Option) Vario-Optics (Axicon or Microlens Moiré)

- Variable angles, higher contrast and resolution



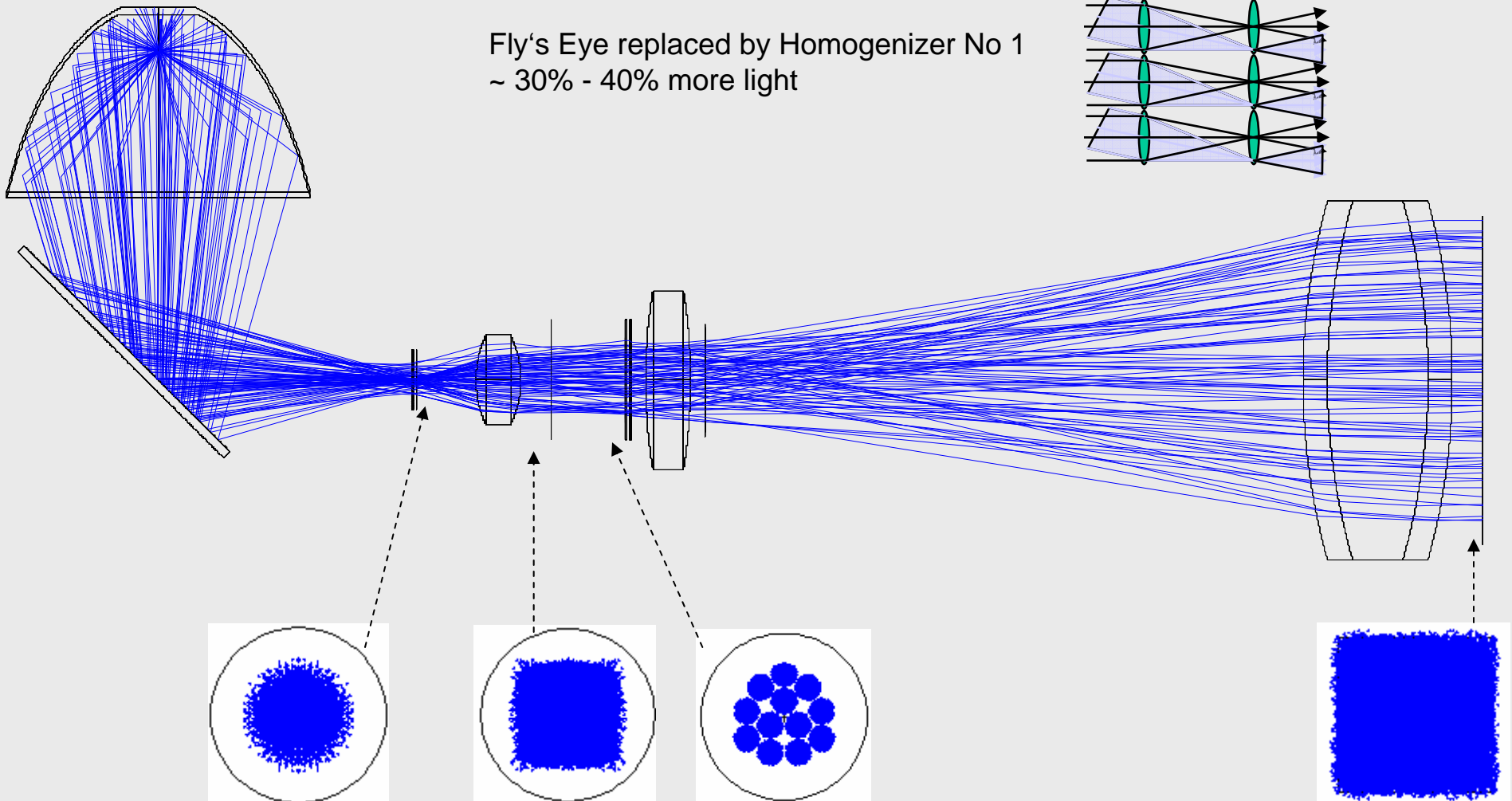
■ Microlens Homogenizer B

- 100% fill factor
- Homogen illumination of front-lens

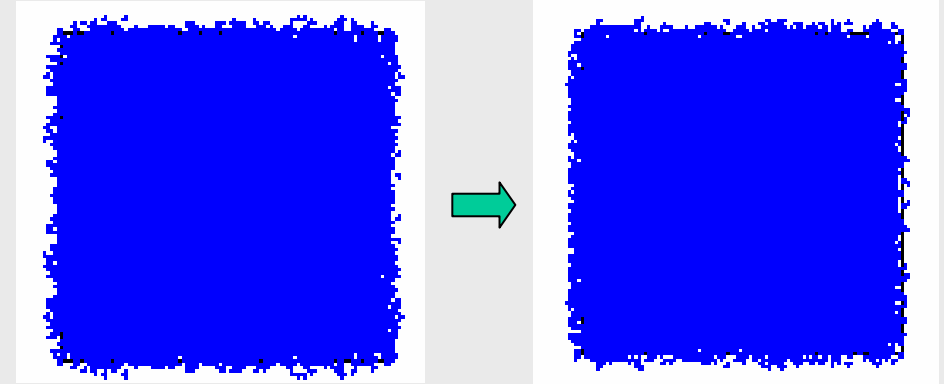
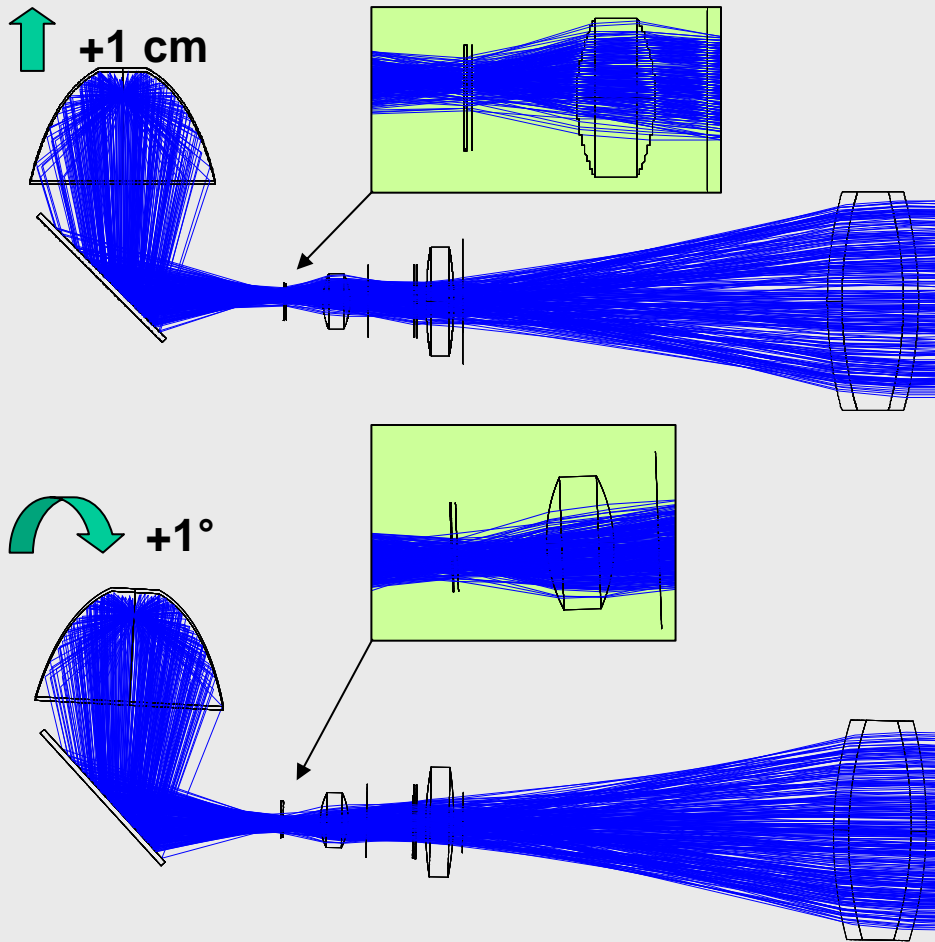


Optical Design - Overview

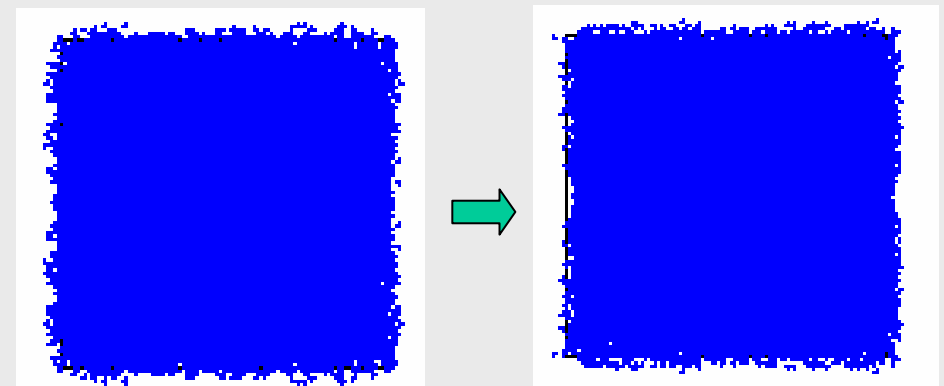
Fly's Eye replaced by Homogenizer No 1
~ 30% - 40% more light



Mis-Alignment of Ellipsoid

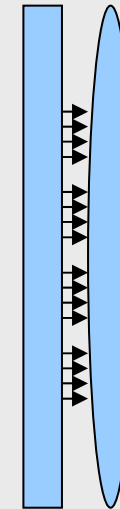
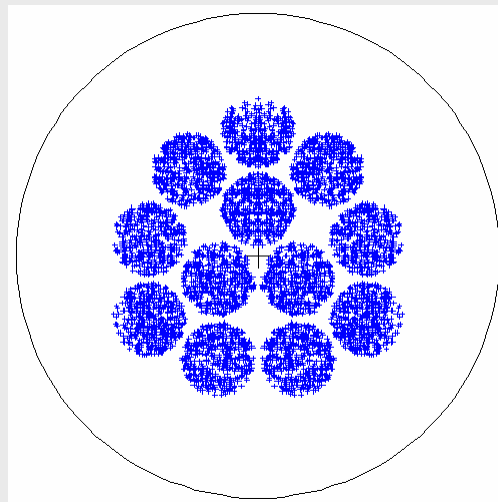
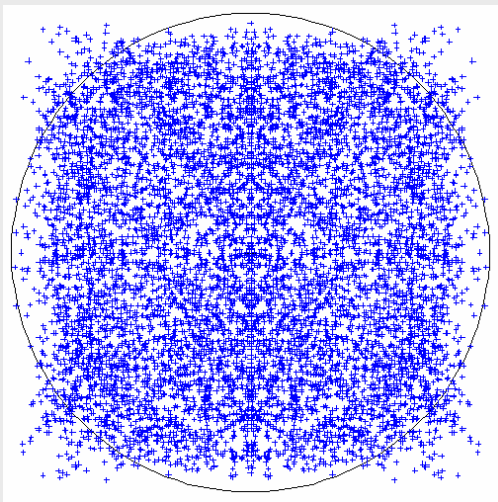


uncritical



Diffraction Reduction - Standard

■ Simple solution: A-Plate, no lenses

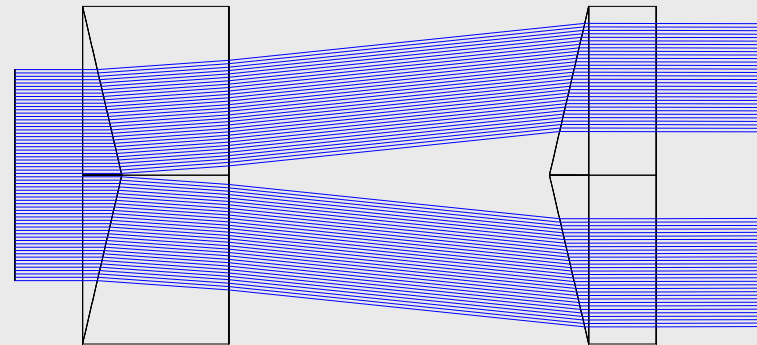


A-Plate defines light distribution on Homogenizer No 2 and defines angular spectrum of mask illumination

A-Plate, no lens
~ 40% loss
Same as standard A-Optics

Optional: Diffraction Reduction - Vario

■ Vario-Optics: Axicon Telescope



■ Microlens Moiré Shaper

A-Plate, no lens
no loss
Same as standard A-Optics



Proposal for Novel Illumination System/Lamphouse

Reduced Alignment Tolerances

- Homogenizer No 1 decouples the light from the ellipsoid
- Small changes in position and angle are uncritical

Higher Resolution for Proximity Printing

- Light source shaping: Ring, Quadrupol, ...

More Light

- Homogenizer No 1 ensures that all incident light remains in optics

High-End „Vario Optics“ for Flexible Diffraction Reduction

- Finetuning of angular spectrum allows side-loop reduction in print