

2.6.12-00 Fourier optics – 4f Arrangement – Filtering and reconstruction



What you can learn about ...

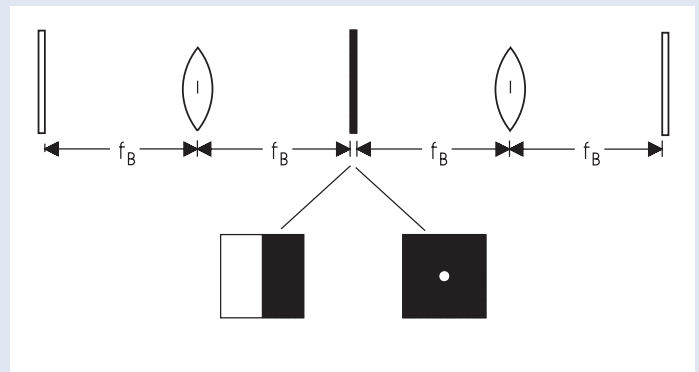
- Fourier transform
- Lenses
- Fraunhofer diffraction
- Index of refraction
- Huygens' principle
- Debye-Sears-effect

Principle:

The electric field distribution of light in a specific plane (object plane) is Fourier transformed into the 4f configuration by 2 lenses and optically filtered with appropriate diaphragms.

What you need:

Optical base plate with rubberfeet	08700.00	1
He/Ne Laser, 5mW with holder	08701.00	1
Power supply for laser head 5 mW	08702.93	1
Adjusting support 35 x 35 mm	08711.00	2
Surface mirror 30 x 30 mm	08711.01	2
Magnetic foot for optical base plate	08710.00	9
Holder for diaphragm/beam plitter	08719.00	2
Lens, mounted, $f = +100$ mm	08021.01	3
Lens holder for optical base plate	08723.00	3
Screen, white, 150 x 150 mm	09826.00	1
Slide -Emperor Maximilian-	82140.00	1
Screen with arrow slit	08133.01	1
Diffraction grating, 4 lines/mm	08532.00	1
Diffraction grating, 50 lines/mm	08543.00	1
Diaphragms, $d = 1, 2, 3$ and 5 mm	09815.00	1
Screen with diffracting elements	08577.02	1
Sliding device, horizontal	08713.00	1
XY-shifting device	08714.00	2
Achromatic objective 20 x N.A.0.4	62174.20	1
Adapter ring device	08714.01	1
Pin hole 30 micron	08743.00	1
Rule, plastic, 200 mm	09937.01	1
Ultrasonic generator	13920.99	1
Glass cell, 150 x 55 x 100 mm	03504.00	1
Table with stem	09824.00	2
Support rod, stainless steel 18/8, $l = 250$ mm, $d = 10$ mm	02031.00	1
Boshead	02043.00	1
Universal clamp	37718.00	1



Principle of the set-up for coherent optical filtration.

Tasks:

1. Optical filtration of diffraction objects in 4f set-up.
2. Reconstruction of a filtered image.

Complete Equipment Set, Manual on CD-ROM included
 Fourier optics – 4f Arrangement –
 Filtering and reconstruction P2261200