Fresnel's zone construction / zone plate 2.2.04-00

What you can learn about ...

- ➔ Huygens-Fresnel principle
- ➔ Fresnel and Fraunhofer diffraction
- ➔ Interference
- ➔ Coherence
- ➔ Fresnel's zone construction
- ➔ Zone plates

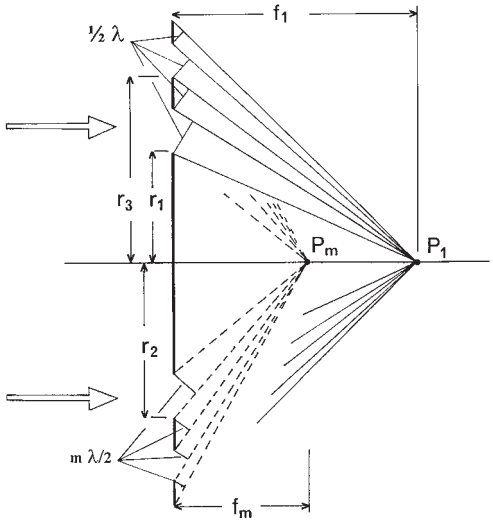
Principle:

A zone plate is illuminated with parallel laser light. The focal points of several orders of the zone plate are projected on a ground glass screen.

What you need:

Laser, He-Ne 1.0 mW, 230 VAC	08181.93	1
Fresnel zone plate, after Fresnel	08577.03	1
Lens holder	08012.00	4
Lens, mounted, f = +20 mm	08018.01	1
Lens, mounted, f = +50 mm	08020.01	1
Lens, mounted, f = +100 mm	08021.01	1
Lens, mounted, f = -50 mm	08026.01	1
Object holder 50 mm x 50 mm	08041.00	2
Ground glass screen, 50 mm d = 50 mm	08136.01	1
Polarisation filter, 50 mm, d = 50 mm	08613.00	1
Optical profile bench, l = 1000 mm	08282.00	1
Base for optical profile bench, adjustable	08284.00	2
Slide mount for optical profil bench, h = 30 mm	08286.01	7

Complete Equipment Set, Manual on CD-ROM included
Fresnel's zone construction / zone plate P2220400



Geometry of the zone plate.

Tasks:

1. The laser beam must be widened so that the zone plate is well illuminated. It must be assured that the laser light beam runs parallel over several meters.
2. The focal points of several orders of the zone plate are projected on a ground glass screen. The focal lengths to be determined are plotted against the reciprocal value of their order.
3. The radii of the zone plate are calculated.