

P5829 Interference of light

- ✓ Coherence
- ✓ Interference
- ✓ Fresnel's mirror
- ✓ Fresnel's zone plate
- ✓ Newton's rings
- ✓ Fabry-Perot's optical cavity

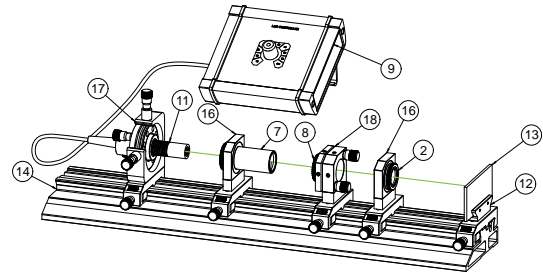


Examples of investigation and measurement

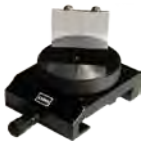
Newton's rings, interference of thin plates

To demonstrate the famous Newton's rings a combination of glass plate and plano-convex lens is used. Typically the lens has a fairly long focal length of about 2 to 4 m. If one uses a coherent light source the radius of curvature of the lens can be smaller resulting in a shorter focal length which is more practical. In this assembly a lens with 100 mm focal length is applied providing excellent Newton's ring when illuminated with the provided "green" laser (11).

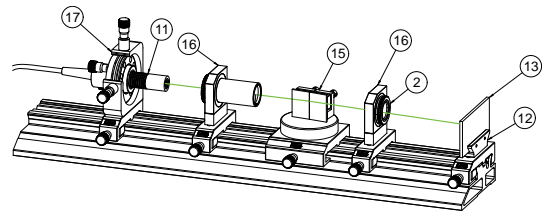
The beam of the laser is expanded by a factor of 6 with the beam expander (6) which is mounted into a mounting plate for C25 mounts. The resulting image pattern is imaged by means of the biconcave lens (2) to the white screen (13).



Fresnel mirror (15)



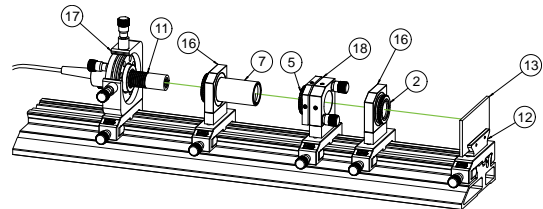
Two mirrors are arranged in such a way that they are simultaneously illuminated by an expanded laser beam. One of the mirrors is slightly tilted with respect to the other providing the required phase shift to observe the interference fringes. Both mirrors are mounted onto adjustment holders allowing the azimuthal and elevational alignment.



Fresnel's zone plate (5)



A fresnel plate designed for 532 nm, 99 fringes and a focal length of 100 mm is mounted into a "click 25" holder fitting into the mounting plate. The fresnel plate is made from a computer graph which has been exposed to a black and white film.

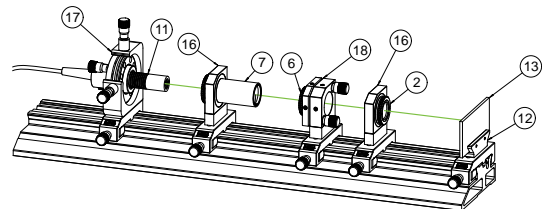


Fabry Perot cavity (6)

Two glass plates are mounted into a click 25 optics holder with a spacing of 3 mm. Each plate is coated for 50% transmission on one side. These sides are facing each other forming a coplanar resonator.

The click 25 optics holder is placed into the adjustment holder which can be tilted in two angles by means of two precision fine pitch screws. To mount the click holder a 2 mm hexagon key is needed.

The adjustment holder is attached to a 20 mm carrier which will be placed onto the provided optical rails.



P5829 Interference of light consisting of:

Item	Qty	Description
1	1	Plano-convex lens $f=40$ mm, C25 mount
2	1	Biconcave lens $f=-20$ mm, \varnothing 10 mm, C25 mount
3	1	Half wedge plate, C25 mount
4	1	Half lens $f=100$ mm, C25 mount
5	1	Fresnel zone plate, C25 mount
6	1	Fabry Perot insert, C25 mount
7	1	Beam expander magnification 6x
8	1	Newton's rings optics
9	1	Adaptive power supply APS-05

Item	Qty	Description
10	1	LED white in C25 housing
11	1	DIMO diode laser module, 532 nm
12	1	Screen holder on carrier 20
13	1	Screen 80 x 40 mm, horizontal and vertical scale
14	1	Optical rail MG 65, 500 mm
15	1	Fresnel mirror assembly
16	4	Mounting plate C25 with carrier 20 mm
17	1	Adjustment holder, 4 axes, carrier 20 mm
18	1	Adjustment holder 40 mm on carrier 20 mm