Basic optical bench

9 feasible experiments

Topics

- Dioptric projector Rectilinear propagation of light
- Reflection of light into spherical mirrors
- Lenses
- Images in spherical mirrors
- Images in converging lenses
 Conjugate points of converging lenses
- The eye and its defects
- · Correction of the eye defects
- Equipment supplied

I Ontical bench 2 mt

i Optical Delicit z IIIt
4 Holders
1 LED projector with power supply
1 Set of 6 glass lenses
1 White screen

2 Lens holders 2 Aluminium rods 1 Concave mirror +10 1 Convex mirror -10 1 Box





Small optical bench

29 feasible experiments

Topics

- Dioptric projector
 Rectilinear propagation of light
- Eclipses
- Moon phases
- Lighting law
 Diffusion of light

- Reflection of light
 Reflection of light into spherical mirrors
 Refraction of light
- Refractive index and the colours of light
- Total reflection
 Refraction of light through a prism
- Dispersion of the white light
- Lenses Images in flat mirrors
- Images in spherical mirrors
- Conjugate points of spherical mirrors
 Images in converging lenses
- Conjugate points of converging lenses
- The eye and its defects
 Correcting eye defects
- The compound microscope
- The slide projector

Equipment supplied

- 1 Linear ruler 1 Equilateral prism 1 Red filter 1 Green filter 1 Blue filter 1 Semi transparent screen 1 Slide 50x50 1 Plexiglas semi cylinder 1 Screen with squared hole 1 Plane mirror 1 Small plane mirror 1 Isosceles prism 3 Holders 1 Holder for the projector 1 Concave mirror + 10
- 1 Convex mirror 10 1 Optical bench 90 cm 1 Optical projector LED 6V 1 Lamp 1 Earth-Moon system 1 Lens +6 cm with lens holder rod 1 Lens +10 cm with lens holder rod 1 Lens -10 cm with lens holder rod 1 Protractor 1 Filter holder 1 White screen 1 Microscope slide with holder 1 Square ruler 1 Beaker 1 Box







4202

Optical Benches - PHYSICS

120 cm wave and geometrical optics bench

4080

With this optical bench, the teacher can perform a great number of quantitative and qualitative experiments on both geometrical and undulating aspects of optic waves. This bench is a necessary educational instrument in order to make a lesson a real moment of union between theory and experimental reality, and this is because of the quickness of its assembly and the ease in performing the experiments.

25 feasible experiments

Topics

- Rectilinear propagation of optical waves
- Lunar and solar eclipse
- Light scattering
- Radiation law
 Reflection laws
- Reflection in spherical mirrors
- Images in spherical mirrors
- Refraction laws
- Total internal reflection
- · Refraction through a prism
- Refraction through lenses
- Images in lenses
- The eye and its imperfections
- Optical instruments The diode laser
- Diffraction through a hole
- Diffraction through a slit
- Measuring the wavelength of a laser
- Interference of light
- Interference according to YoungMeasurement of a wavelength with Young's method
- Diffraction grating
- · Measurement of a wavelength with a grating
- Measuring the wavelength of white light
- Linear polarization
- Polarized lightNatural rotatory power





90 cm Optical bench to study diffraction

The optical bench allows you to study qualitatively and quantitatively the phenomena of diffraction.

A beam of laser light is directed on a revolving support which has some splits, holes and openings. The diffraction figures which are formed are collected by a light sensor which is in line with the linear position sensor. Moving the sensor horizontally with a handle, you will get a voltage which is proportional to the light intensity related to the position of the light sensor.

Connecting the outputs of the two sensors to a data acquisition system, it is possible to obtain the curves that show how the light intensity varies according to the position. Knowing the geometrical features of the openings and holes and evaluating the distance between the diaphragm and the light sensor, it is possible to quantitatively verify these phenomena.

Topics

• Diffraction phenomena

Interference phenomena

Suitable to be used with sensors

Equipment supplied

1 Optical bench provided with brightness sensor and potentiometer for linear position
1 High quality diode laser
1 Power supply for diode laser
1 Support with laser holder
2 Set of revolver diaphragms with slots of different size
1 Support for disk with slots (to place directly on the laser source)
1 White screen
1 Support for white screen
2 Cables for brightness and potentiometer sensors
2 Sensor adapters



Equipment for online use - not supplied



The graph illustrated above was obtained directing the laser ray on a dual slit. It clearly shows the overlap of two wave phenomena: the Young interference produced by the two slits and the diffraction generated by each slit. Also in this case it is possible to check the relation which provides the distance from the center of the secondary maximums and minimums.

8403

PHYSICS - Optical Benches

Modular Optical Benches	
100 cm, optical bench	4401
150 cm, optical bench	4402
200 cm, optical bench	4404

Thanks to this modular system it is possible to choose between benches of different lengths. It is also possible to connect a joint extension of 50cm to each of them: this is very useful to perform optical experiments where the optical beam, due to the effect of reflection or refraction, comes out from the main axis of the bench. Thanks to these optical benches, the teacher can perform a large number of experiments on optics core topics. To satisfy teaching needs, we offer various accessories to complete your own optical bench.

4401 - 4402 - 4404



