<table>
<thead>
<tr>
<th>No.</th>
<th>Model</th>
<th>Product name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F-GX-1000</td>
<td>Characteristic of fiber optics and semiconductor laser</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>F-GY1010</td>
<td>Diffraction of light</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>F-HX1020</td>
<td>He-Ne laser and laser resonance</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>F-HX1021</td>
<td>He-Ne laser mode analysis and stabilized frequency</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>F-PZ1030</td>
<td>Polarization of light</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>F-SLGS1040</td>
<td>Biprism interference experiment</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>F-JH1050</td>
<td>Geometric optics experiment</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>F-ST1060</td>
<td>θ Modulation experiment</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>F-FLY1070</td>
<td>Spatial spectrum and simulation of spatial filter of Fourier optics</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>F-TXXJ1071</td>
<td>Optical image addition and subtraction</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>F-SG1080</td>
<td>Acousto-optic effect experiment of crystal</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>F-SG1081</td>
<td>Acousto-optic effect experiment of liquid</td>
<td>6</td>
</tr>
<tr>
<td>13</td>
<td>F-YJ1090</td>
<td>Electro-optic effect of liquid crystal</td>
<td>7</td>
</tr>
<tr>
<td>14</td>
<td>F-FLD1100</td>
<td>Faraday effect</td>
<td>7</td>
</tr>
<tr>
<td>15</td>
<td>F-JTDG1110</td>
<td>Electro-optic effect of crystal (Pockels effect)</td>
<td>8</td>
</tr>
<tr>
<td>16</td>
<td>F-FSG1120</td>
<td>Polarization characteristic of reflection light and Brewster angle measure</td>
<td>8</td>
</tr>
<tr>
<td>17</td>
<td>Y-ZYS1130</td>
<td>Measure of liquid refractive index</td>
<td>9</td>
</tr>
<tr>
<td>18</td>
<td>F-GXTX1140</td>
<td>Optical image differential</td>
<td>9</td>
</tr>
<tr>
<td>19</td>
<td>F-JGSB1150</td>
<td>Laser speckle measure of transverse tiny displacement</td>
<td>10</td>
</tr>
<tr>
<td>20</td>
<td>F-DGS1160</td>
<td>Multiple-beam Interference (F-P Interferometer)</td>
<td>10</td>
</tr>
<tr>
<td>21</td>
<td>F-TYN1180</td>
<td>Characteristic study of solar cell</td>
<td>11</td>
</tr>
<tr>
<td>22</td>
<td>F-GT1190</td>
<td>Photoelastic effect</td>
<td>11</td>
</tr>
<tr>
<td>23</td>
<td>F-GSCL1200</td>
<td>Light speed measure experiment</td>
<td>12</td>
</tr>
<tr>
<td>24</td>
<td>F-ZHG2010</td>
<td>Interferometer</td>
<td>12</td>
</tr>
<tr>
<td>25</td>
<td>F-GXG52020</td>
<td>Fiber interferometer</td>
<td>13</td>
</tr>
<tr>
<td>26</td>
<td>F-ZD2030</td>
<td>Piezoelectric effect and vibration measurement with laser</td>
<td>13</td>
</tr>
<tr>
<td>27</td>
<td>F-JGCI2041</td>
<td>Teching system of distance measure with laser phase</td>
<td>14</td>
</tr>
<tr>
<td>28</td>
<td>F-CCD2050</td>
<td>Laser displacement meter –working principle and application of CCD</td>
<td>14</td>
</tr>
<tr>
<td>29</td>
<td>F-QX-1</td>
<td>Synthesis semiconductor laser hologram</td>
<td>15</td>
</tr>
<tr>
<td>30</td>
<td>F-QX-2</td>
<td>Semiconductor laser hologram experiment</td>
<td>15</td>
</tr>
<tr>
<td>31</td>
<td>F-JCGX3010</td>
<td>Synthesis experiment system of fundamental optics</td>
<td>16</td>
</tr>
<tr>
<td>32</td>
<td>FQ-102</td>
<td>Synthesis testing experiment system of photoelectric device identity</td>
<td>17</td>
</tr>
<tr>
<td>33</td>
<td>FQ-XXGK1</td>
<td>Synthesis experiment system of information optics(1)</td>
<td>18</td>
</tr>
<tr>
<td>34</td>
<td>FQ-XXGK2</td>
<td>Synthesis experiment system of information optics(II)</td>
<td>19</td>
</tr>
<tr>
<td>35</td>
<td>F-QZB3030</td>
<td>Photorefractive effect and mass information storage of crystal</td>
<td>20</td>
</tr>
<tr>
<td>36</td>
<td>F-QTX3040</td>
<td>Optical communication experiment system</td>
<td>21</td>
</tr>
<tr>
<td>37</td>
<td>F-SPJG3050</td>
<td>Dual-frequency laser experimental system</td>
<td>22</td>
</tr>
<tr>
<td>38</td>
<td>F-100</td>
<td>He-Ne stabilized frequency laser</td>
<td>23</td>
</tr>
<tr>
<td>39</td>
<td>F-API1</td>
<td>High-frequency weak signal optical amplifier</td>
<td>23</td>
</tr>
<tr>
<td>40</td>
<td>F-JGGS1170</td>
<td>Laser beam analysis instrument</td>
<td>23</td>
</tr>
<tr>
<td>41</td>
<td>OPT-1A</td>
<td>Laser power indicator</td>
<td>24</td>
</tr>
<tr>
<td>42</td>
<td>OPT-3</td>
<td>Multi-band laser power meter instruction</td>
<td>24</td>
</tr>
<tr>
<td>43</td>
<td>F-P</td>
<td>Scanning interferometer</td>
<td>24</td>
</tr>
<tr>
<td>46</td>
<td>MKR2</td>
<td>Laser of Michelson interferometer</td>
<td>26</td>
</tr>
</tbody>
</table>
1. F-GX-1000 Characteristic of fiber optics and semiconductor laser

- Cutting and end treatment of fiber.
- Coupling of fiber with laser and the measurement of coupling efficiency.
- Electro-optical characteristics of semiconductor laser (threshold current and gain slope).
- Observe the pattern and polarization of the fiber, the effect on modes caused by fiber bending (interference modes).
- Determination of the speed of light in fiber and calculation of the average refractive index of the fiber materials.
- Modulation, emission, fiber transmission, receiver amplification and demodulation (communication theory) of the analog signal (audio).

Experiment contents and related subjects:

- Pick-up of the vibration signals.
- Measurement of the fiber numerical aperture (specific measurement annexes are needed).

Features of the instruments:

- Using semiconductor lasers whose power stability is better than 1%.
- Light detector: aperture plate contains 12 steps, the limiting aperture are circular hole and slit respectively. Diameters of the circular hole are 0.5, 1.0, 2.0, 3.0, 4.0 and 6.0 mm; width of the slit are 0.2, 0.3, 0.4, 0.8 and 1.2 mm.
- Slit components: it contains filament, single slit, double slit, multi-slit, grating and many other structures.
- Large one-dimension displacement plane: lateral movement accuracy is 0.02 mm and range of movement is ≥ 100 mm.

Complete set of equipment:

- Optical experiment guide, optical fiber test device, semiconductor laser, fiber coupler, fiber seats, fiber, polarizer, laser power indicator, fiber knife, skinning pliers, one-dimensional displacement of the probe light aircraft + 12 steps light detector (optional), audio signal source, oscilloscope (dual trace 20 MHz, self-contain) and etc.

2. Diffraction of light

Experiment contents and related subjects:

- The diffraction phenomenon of filaments, single slit, double slits, multi-slits and small holes can be observed and the light intensity distribution can be measured.
- Verify the relationship between the wavelength, slit width and the intensity distribution.
- Grating equation, Heisenberg uncertainty principle and Babinet principle.

Features of the instruments:

- Using semiconductor lasers whose power stability is better than 1%.
3. He-Ne laser and laser resonance

Experiment contents and related subjects:
- Using semiconductor laser as the collimation light source and self-collimation method to adjust a semi-internal cavity He-Ne laser to meet the staring conditions for oscillation and so as to produce laser.
- By moving the reflecting mirror on the guide to change the resonant cavity length, the relationship between cavity length and the transverse mode, longitudinal mode (with F-P scanning interferometer), power can be observed and, at the same time, the effect on waist diameter and divergence angle can also be observed. The working principle of laser and laser resonate theory can be understand and grasped.
- Measure the gain of the laser by inserting an adjustable loss in the cavity.

Features of instruments:
- All hard sealed semi-internal cavity He-Ne laser has a very long storage life and service life.
- The semiconductor laser is 650nm, 4mW; the laser power meter is 3 and a half digital meter whose range are 200μW, 2mW, 20mW, 200mW and tunable range respectively.
- Stabilized current laser power supply whose current range is 4 - 7mA.
- Laser beam analyzer which can observe the spot intensity distribution, measure spot diameter and divergence angle, etc. (optional)

Complete set of equipment:
- Optical experiment guide, semiconductor laser, semi-internal cavity He-Ne laser, beam expander mirror, two-dimensional adjustable mold piece frame, laser power indicator, gain measuring annex, F-P scanning interferometer (optional), laser beam analysis meter (optional), oscilloscope (self) and etc..

4. He-Ne laser mode analysis and stabilized frequency

Experiment contents and related subjects:
- Observe and understand the longitudinal mode and the gain curve of He-Ne laser.
- Observe and analyze the frequency characteristics of He-Ne laser.
- Frequency stabilize of He-Ne laser.

Features of instruments:
- Using frequency stabilized laser as the light source, the laser longitudinal mode state can be artificially controlled.
- Using special high-quality hard-seal whole laser cavity, the He-Ne Frequency stabilized laser has infinite storage life and 10,000 hours of service life.
- The output power of the laser is ≥ 0.8mW, the power stability is better than 1% and the frequency stability is better than 1×10⁻⁷.
- FP scanning interferometer: the fine constant is ≥ 100 and the free spectral is 4G
- Suitable laser beam analyzer which can be used to observe and measure the Gaussian distribution of spot intensity, spot size and divergence angle.

Complete set of equipment:
- Optical experiment guide, frequency stabilized He-Ne laser, four-dimensional adjustment frame, FP scanning interferometer, laser beam analyzer (optional), oscilloscope (self-contained) and so on.
5. Polarization of light

Experiment contents and related subjects:
● Observe and verify the shear wave properties of light, polarization and polarization of semiconductor laser.
● Verify the Malus law.
● The birefringence of crystal, 1/4 wave plate, 1/2 wave plate (optional).
● Polarization phenomenon and theories of optical activity crystal.

Features of instruments:
● Using visible laser diode (635nm, 3mW) as the light source and it’s better than 1% power stability effectively improve the experimental precision.
● Ranges of the laser power indicator are 200μW, 2mW, 20mW, 200mW and the tunable range, the use of which improve the measurement accuracy of relative value and eliminate shifting errors.
● Optical rotation of optical active material is $\geq 45$ degrees and thickness is 3mm, the phenomenon is apparent and the accuracy is high.

Complete set of equipment:
● Optical experiment guide, the semiconductor laser, polarizer, 1/4 wave plate, quartz rotation accessories, laser power indicator, 1/2 wave plate (optional), liquid optical rotation pool (optional) and etc..

6. Biprism interference experiment

Experiment contents and related subjects:
● Adjust the optical path to observe the sub-wave front interference fringes and experience the principle and theory of sub-wave front interference.
● Measure the interference fringe space and project the laser wavelength.

Features of instruments:
● Using semiconductor laser (650nm, 4mW) as the light source and it’s power stability is better than 1%.
● Use a one-dimensional displacement rack + 12 steps light probe to measure data, it’s more objective and the precision can reach 0.02mm.
● The optical experiment guide is 1200mm.

Complete set of equipment:
● Optical experiment guide, semiconductor laser, biprism, lens, laser power indicator, one-dimensional displacement rack+ 12 steps light probe and etc..
7、Geometric optics experiment

Experiment contents and related subjects:
● Lens imaging formula, using auto collimation method to measure the lens’ focal length, using conjugate method (Bessel method) to measure the focal length.
● Observation and measurement of lens’ spherical aberration, chromatic aberration and it’s depth of field.
● Combination microscopes, binoculars and etc.

Features of instruments:
● The high white light source with 12V low voltage power supply and no darkroom experiments.
● Abundant component sets: lens \((f = 60,100,200, -60)\), filter, spherical aberration screen, “品” word screen, variable aperture, microscope goods and etc.

Complete set of equipment:
● Optical experiment guide, white light source, lenses, filters, variable aperture, spherical aberration screen, “\(\text{品}\)” word screen, microscope goods and etc.

8、θ Modulation experiment

Features of the instruments:
● θ modulation technique is a clever application of Abbe imaging theory. It will transfer the original image into grating modulation image distributed at a certain angle. Insert the modulation image into the optical path and pursue appropriate spatial filtering treatment with white light illumination to achieve pseudo-color coding and, then, color output image is obtained.

Complete set of equipment:
● Optical experiment guide, light source, lens, Fourier lens, θ films, the spectrum holder, frosted glass and so on.
9. Spatial spectrum and simulation of spatial filter of Fourier optics

Experiment contents and related subjects:
- Observe the spectrum of the grid "光" word screen, understand the concept of space spectrum in Fourier optics.
- Observe the changes of image by changing the frequency spectrum to understand the Abbe imaging theory and the concept of spatial filtering.
- Optical simulation of convolution and to understand the physical meaning of convolution.

Features of the instruments:
- Using semiconductor laser as the light source (635nm, 3mW).
- Adjustable three-dimensional spatial filter, with Φ15mm, Φ1mm, Φ0.4mm, and the slit width 0.5mm aperture.

Complete set of equipment:
- Optical experiment guide, semiconductor laser, lens, Fourier lens, mesh, grid "光" word screen, orthogonal grating, beam expander mirror, spatial filter, frosted glass and etc..

10. Optical image addition and subtraction

Experiment contents and related subjects:
- Understand the structure and principle of the 4f optical system.
- To add and subtract optical images using grating and to understand the physical meaning of the image addition and subtraction.
- Deepen the knowledge and understanding of Fourier optical spectrum filter.

Complete set of equipment:
- Optical experiment guide, semiconductor laser, beam expander lens, collimating lens, Fourier lens, one-dimensional grating, object screen.
11. Acousto-optic effect experiment of crystal

Features of the instruments:
- Gold plating technology is used in quartz crystal electrode and also be connected with heavy flint glass indium solder to make the coupling more reliable and effective. And, also, the experimental results will be better.
- Sound wave frequency of the acousto-optic modulator (AOM) drive power is 9-11MHz.
- 12 steps light probe combined with a one-dimensional displacement planes are adopted to measure the intensity distribution: the accuracy of lateral movement is 0.02mm.

Complete set of equipment:
- Optical experiment guide, semiconductor lasers, acousto-optic crystal + one-dimensional slider, big one-dimensional displacement planes + 12 steps light probe, drive power of acousto-optic modulator, lens, laser power indicator and other equipments.

Experiment contents and related subjects:
- Observe the diffraction phenomenon of ultrasonic grating in crystal and measure the diffraction efficiency.
- Understand the interaction mechanism between sound waves and light waves and project the sound velocity in materials.
- Modulation, transmission and demodulation of the analog signal (audio).
- The relationship between modulating frequency and driving frequency (specific annexes are needed).

12. Acousto-optic effect experiment of liquid

Features of the instruments:
- Different non-corrosive liquids such as pure water, salt, etc. may be used to observe the diffraction phenomenon.
- The sound wave frequency of acousto-optic modulator (AOM) drive power is 9-11MHz.
- A 12 steps light probe combined with an one-dimensional displacement planes are used to measure the light intensity distribution: the accuracy of lateral movement is 0.02mm.

Complete set of equipment:
- Optical experiment guide, semiconductor laser, liquid acousto-optic accessories + one-dimensional slider, big one-dimensional displacement planes + 12 steps light probe, drive power of acousto-optic modulator, lens, laser power indicator and etc..

Experiment contents and related subjects:
- Observe the diffraction phenomenon of ultrasonic grating in liquid and measure the diffraction efficiency.
- Understand the interaction mechanism between the sound wave and light wave in liquid, project the speed of sound in liquid.
- The modulation, transmission and demodulation of analog signal (audio).
- The relationship between modulating frequency and driving frequency (specific annexes are needed).
13、Electro-optic effect of liquid crystal

Experiment contents and related subjects:
● Observe the impact on polarized light caused by liquid crystal box and measure the twist angle and contrast ratio of liquid crystal.
● Understand the working principle of liquid crystal and working conditions, measure the response time of liquid crystal.
● Understand the working principle of photodiode.
● Measure the diffraction angle of liquid crystal box, observe and measure the polarization properties of diffraction light.
● Estimate the structure size of liquid crystal materials.
● Verify the Malus law.

Features of the instruments:
● Using semiconductor laser as the light source (650nm, 4mW).
● The adjust range of the drive power voltage of liquid crystal is 2 - 12V.
● The rang of the digital laser power meter is 200μW, 2mW, 20mW, 200mW and the tunable range respectively.
● The limiting aperture of polarized disc is 27mm.

Complete set of equipment:
● Optical experiment guide, semiconductor laser, polarizer, liquid crystal cell, liquid crystal drive power, photodiode, laser power indicator and etc..

14、Faraday effect

Experiment contents and related subjects:
● Observe the magneto-optic rotation phenomenon of the materials, measure the relationship between the magnetic field current and the rotation angle of polarization plane.
● Observe the relationship between the magnetic field current and the direction of the rotation, compare it with other rotation phenomena.
● Calculate the Verdet constant of the material.
● Verify the Malus law.

Features of the instruments:
● Using semiconductor laser (650nm, 4mW) as the light source.
● The maximum rotation angle is $\geq 15^\circ$ (3A), optical active material has large Verdet constant.
● The limiting aperture of polarized disc is 27mm.

Complete set of equipment:
● Optical experiment guide, semiconductor laser, polarizer, magneto-optic rotation material, power supply for the coil, electromagnetic coil, laser power indictor and etc.
15. Electro-optic effect of crystal (Pockels effect)

- Using a sinusoidal electric signal to modulate the crystal so as to achieve the optical transmission of electric signals, understand the influence to the modulation, transmission process caused by working points.
- To achieve the optical transmission of audio signals through external audio signal, understand the principles and methods of external modulation in optical communication signal.

**Features of the instruments:**
- Using semiconductor laser as the light source (650nm, 4mW).
- The limiting aperture area of crystal is $5 \times 5\text{mm}^2$.
- The maximum voltage $V_{\text{max}}$ is $\geq 1600\text{V}$ which makes the phenomenon more clear and complete.
- The process that the LN crystal changes from a uniaxial crystal to biaxial crystal under the electric field can be observed, the interference pattern is complete and clear.

**Complete set of equipment:**
- Optical experiment guide, semiconductor laser, beam expander mirror, polarizer, analyzer, 1/4 wave plate, LN crystal accessories (including three-dimensional adjustment frame), laser power indicator, oscilloscope (self-contained), the audio signal source (self-contained) and etc.

**Experiment contents and related subjects:**
- Observe the interference patterns formed by convergent polarized light through the LiNbO$_3$ crystals and compare the difference among different voltage conditions to understand the difference between uniaxial and biaxial crystals.
- Observe the different polarization states of output light under different voltages, understand the Pockels effect mechanism.
- Measure the half-wave voltage and determine the linear relationship between $\Delta n$ and $E$ to plot the modulation curves of laser.

16. Polarization characteristic of reflection light and Brewster angle measure

**Features of the instruments:**
- Using a semiconductor laser (635nm, 3mW) as the light source.
- The limiting aperture area of polarized disc is 27mm.
- Diameter of the optical rotation platform is $\phi 120\text{mm}$.
- The range of the digital laser power meter is 200$\mu$W, 2mW, 20mW, 200mW and the tunable range respectively.

**Complete set of equipment:**
- Optical experiment guide, semiconductor laser, polarizer, 1/4 wave plate, optical rotation platform, triangular prism, laser power indicator and etc.

**Experiment contents and related subjects:**
- Observe and verify the shear wave properties of light, the polarization and polarization of semiconductor laser.
- Verify the Malus law.
- Understand and verify the polarization properties of reflected light, determine the Brewster's angle.
- Measure the refractive index of material using the method of minimum deviation angle.
17、Measure of liquid refractive index

Experiment contents and related subjects:
- Compare the refraction conditions of laser in different mediums.
- Measure the liquid refractive index using the method of minimum deviation angle.

Features of the instruments:
- Using semiconductor laser (650nm, 4mW) as the light source.
- Diameter of the optical rotation platform is φ120mm.

Complete set of equipment:
- Optical experiment guide, semiconductor laser, optical rotation platform, hollow prism, power indicator and etc..

18、Optical image differential

Experiment contents and related subjects:
- Regulation of parallel laser.
- Understand the structure, principle, using method and applications of 4f optical system.
- Pursuing differential to optical images using composite grating, understand the principle of optical differential and understand the physical meaning of differential image, to achieve the enhancement effect of image edge.
- Deepen awareness and understanding of Fourier optical spectrum filter.

Features of the instruments:
- Using semiconductor laser (650nm, 3mW) as the light source.
- Fourier lens (F = 150mm).

Complete set of equipment:
- Optical experiment guide, semiconductor laser, beam expander lens, collimating lens, Fourier lens, composite grating, one-dimensional displacement rack.
19. Laser speckle measure of transverse tiny displacement

Experiment contents and related subjects:
- Observe the laser speckle patterns, understand the reasons and characteristics of speckle.
- Grasp the measurement methods and principles of small displacement with double exposure.
- Verify the relation formula between displacement and speckle image through actual measurement.

Features of the instruments:
- Using semiconductor laser (650nm, 4mW) as the light source.
- Self arranging optical path to shoot the speckle patterns and to measure, analyse the speckle pattern.

Complete set of equipment:
- Optical experiment guide, semiconductor laser, beam expander lens, collimating lens, dry plate rack, rack one-dimensional displacement, laser power indicator, frosted glass and etc..

20. Multiple-beam Interference (F-P Interferometer)

Purpose of the experiment and related subjects:
- Adjust the position between the two mirrors to make they are parallel with each other and form a FP interferometer.
- Observe the multi-beam interference of laser in the FP interferometer and understand the working principle and theory of FP interferometer.
- Change the cavity length, measure and calculate the characteristic parameters of the interferometer. Fine-tuning the space between two mirrors using piezoelectric ceramics to observe its scanning feature to the transmitted wavelength and understand the working principle of scanning interferometer, observe the frequency characteristics of lasers and calculate the characteristic parameters of the interferometer.

Features of the instruments:
- Adjustable interferometer cavity length facilitate the research of the impact of the cavity length to parameters.
- The output power of the He-Ne laser is ≥ 0.7mW and the operating current is 5mA.

Complete set of equipment:
- Optical experiment guide, He-Ne laser, four-dimensional adjustment support, scanning interferometer and accessories, photoelectric probe, host, oscilloscope (self-contained) and etc..
21. Characteristic study of solar cell

**Purpose of the experiment and related subjects:**
- Measure the optical power incident to solar cells, the open circuit voltage and short circuit current of solar cells.
- Draw the changing curve of open circuit voltage, short circuit current with incident light power and the curve contains the voltage-current characteristic of the solar cell.
- Calculate the conversion efficiency, fill factor and the resistance of the solar cell.

**Features of the instruments:**
- Using halogen (220V, 75W) as the light sources.
- Solar panels (100mm × 100mm).
- The effective aperture of the optical power meter detector is Φ10mm.

**Complete set of equipment:**
- Optical experiments guide, solar panels, light power indicator, solar cell characteristics of experimental hosts, experimental light source and etc..

22. Photoelastic effect

**Purpose of the experiment and related subjects:**
- Observe the stress distribution pattern of photo-elastic material changing into anisotropic from isotropic caused by force.
- Distinguish the isoclinic line and the equidifferent line.
- Using 1/4 wave plate to cancel isoclinic line.
- Using dedicated stress analysis software to analyze the stress (optional).

**Features of the instruments:**
- Value display of the pressure.
- Light Source: 220V, 30W.
- Effective limiting aperture of polaroid is Φ58mm, effective limiting aperture of 1/4 wave plate is Φ58mm.

**Complete set of equipment:**
- Optical experiment guide, polarizer, 1/4 wave plate, imaging lens, light elastic material, assistor, image acquisition system and analysis software (optional) and etc..
23. F−GSCL1200 light speed measure experiment

Experiment contents and related subjects:
- The electro-optical properties of semiconductor laser.
- Measure the propagation velocity of light in the air using phase method.

Features of the instruments:
- Built-in phase meter for direct reading.

Complete set of equipment:
- Host, guide, reflecting mirrors, light power indicator, oscilloscope (self-contained).

24. F-ZHG2010 Interferometer

Purpose of the experiment and related subjects:
- Combination Michelson interferometer
- Combination Mach - Zehnder interferometer
- Combination Sagnac interferometer
- Compare the difference among the three interferometers and measure the relationship between air pressure and the refractive index with interferometers.

Features of the instruments:
- Using semiconductor laser (635nm, 3mW) as the light source
- In this experiment, a mini-optical experimental platform (600 × 400 × 50mm³) is supplied.
- The chamber length is 10cm, the pressure measurement range is 0-300mmHg.

Complete set of equipment:
- Small optical experimental platform, semiconductor laser, beam splitter, reflecting mirror, beam expander mirror, air chamber + pressure gages and etc..
25、F-GXGS2020 Fiber interferometer

Experiment contents and related subjects:
● Cutting and end treatment of fiber.
● Using the optical fiber as the transmission path of coherent light to assemble Mach –Zehnder interferometer and observe the interference fringes through CCD.
● Measure the impact on interference fringes caused by temperature change.

Features of the instrument:
● Image acquisition through CCD.
● Using semiconductor laser (650nm, 4mW) as the light source.
● Using thermoelectric cooler for temperature adjustment and control, the temperature control range is 10℃-40℃.

Complete set of equipment:
● Semiconductor laser, beam splitter, fiber coupler with seven degrees of freedom, CCD camera+monitor, optical fiber, optical fiber cutter, fiber stripping pliers, semiconductor temperature controller.

26、F-ZD2030 Piezoelectric effect and vibration measurement with laser

Experiment contents and related subjects:
● Assemble Mach –Zehnder interferometer on the optical experiment platform.
● Observe and measure the relationship between interference fringes and vibration through the oscilloscope, measure, understand the methods and principles of using interference method to measure vibration.
● Measure the relationship between driving voltage and expansion volume.
● Observe the resonance phenomenon.

Features of the instruments:
● Using semiconductor laser (650nm, 4mW) as the light source.
● Small optical experiment platform (600 × 400 x 50mm³).
● The PZT power supply voltage range is 10-250V.

Complete set of equipment:
● Small optical experiment platform, semiconductor laser, piezoelectric ceramic and drive power, effecting mirror, beam splitter, beam expander mirror, oscilloscope (self-contained) and etc.
27、F-JGCJ2041 Teching system of distance measure with laser phase

Purpose of the experiment and related subjects:
- Electro-optical properties of semiconductor lasers and the basic principles of laser modulation.
- Grasp the basic principle and approach of laser phase ranging.
- The significance and methods of multi-wavelength measurement.
- Performance, working principle and characteristic of avalanche diode.

Features of the instruments:
- Large measuring range can be obtained by using higher laser power.
- The combination of multiple modulation frequencies (measure wavelength) can increase the measurement range and accuracy.
- Built-in phase meter.

Complete set of equipment:
- Experiment host, test track, 25mW laser diode, lens, avalanche diode probe, oscilloscope (self-contained) and etc..

28、F-CCD2050 laser displacement meter – working principle and application of CCD

Experiment contents and related subjects:
- The working principle, driving principle and characteristics of integration time of linear array CCD.
- Optical signal conditioning
- Two-value and differential of signal.
- Applications of linear array CCD in the dimensional measurement field.
- Working principle of laser displacement meter.

Features of the instruments:
- Driver timing circuit is adjustable, impact on the acquisition signal caused by drive signal and integration time can be observed.
- One-by-one count can be carried out on the pixel, experience the measuring principle.

Complete set of equipment:
- Experiment host, CCD sensor, optical experiment guid, laser diode, lens, polarizer, oscilloscope (self-contained) and etc..
29、F-QX-1 Synthesis semiconductor laser hologram

Purpose of the experiment and related subjects:

- Using long coherent semiconductor laser as the light source.
- Shooting reflective white light reproducible hologram.

Features of the instruments:

- Small size, long life, need no maintenance, safety and other features.
- The semiconductor laser is 650nm, 25mW.
- Using special holographic plate which can be operated under white light such as under fluorescent lights and do not need darkroom.

Complete set of equipment:

- Structural frame, semiconductor lasers, timer power.

30、F-QX-2 Semiconductor laser hologram experiment

Features of the instruments:

- Using semiconductor laser as the light source (650nm, 25mW) which has the characteristics of small size, low cost and long life.
- Using special holographic edition which can be operated in white light, such as under fluorescent lights, and do not need darkroom.
- Small optical experimental platform (600 × 400 × 50mm3).

Complete set of equipment:

- Small optical experimental platform, the semiconductor laser, beam splitters, mirrors, power timer, mirror beam expander, loading platform and etc..

Purpose of the experiment and related subjects:

- Using long coherent semiconductor laser as the light source to shoot reflection, transmission-type holograms and holographic grating or assembled Michelson interferometer.
31、F-JCGX3010 Synthesis experiment system of fundamental optics

Related experiment subjects:
The basic configuration of this set of system includes a variety of light sources, lenses, various slits, gratings, prisms, polarizer, mirrors, wave plates, optical power meter, etc. which are totally more than 40 sets and 33 species of optical, mechanical attachment and optical experimental platform and the magnetic bases. More than 5 major categories and 30 kinds of experiments can be carried out such as geometrical optics, crystal optics, polarization optics, coherent optics, Fourier optics and etc..

Experiment contents and related subjects:
- Lens imaging
- Bessel method to measure the focal length
- Self-collimation method to measure the focal length
- Spherical aberration
- Chromatic aberration
- Depth of Field
- Combination microscope
- Combination telescope (two kinds)
- Combination projector
- Transverse wave properties of light
- Malus’ law
- 1 / 4 wave plate
- 1 / 2 wave plate
- Optical rotation properties of quartz
- Optical rotation coloration
- Interference of convergent polarized light (white light, laser)
- Polarization characteristics of semiconductor laser
- Biprism interference
- Slit diffraction
- 0 modulation (pseudo color coded)
- Abbe - Porter experiment (spatial frequency filter)
- Physical demonstration of convolution
- Michelson interferometer
- Mach - Zehnder interferometer
- Sagnac interferometer
- Measurement of the relationship between air pressure and index
- Reflective hologram
- Transmit hologram
- Expanding of laser beam
- Grating Characteristics
- Measurement of filament diameter

The characteristic of the system is:
- The system is open, so that users can increase or decrease the annexes to make the system function more practical and powerful.
- The experiment content is rich which covering almost all fields of basic optics.
- Abundant attachments and flexible portfolio which enable users to develop more unique experiment according their own design.
32、FOE-602 Synthesis testing experiment system of photoelectric device identity

FOE-602 Optical characteristic test system can carry out the characteristic test experiment of photodetectors semiconductor light emitting devices and electrophotonic detector on an integrated platform, the experimental system using modular structure which includes the modules of (1) power control; (2) photodetector Characteristics of test; (3) light source characteristics test; (4) photoelectric multiplier tube test; (5) characteristics of avalanche photodiode test; (6) Spectrum Test. The light source and detector of the experimental system can be replaced according to different experiments and the modules are relatively independence between each other and, at the same time, they are interrelated. Independent module experiment may be conducted according to the requirement and self-designed comprehensive experiment can also be conducted. The whole experimental system shares a DC voltage with four gear range. Module (2) and (3) share a fourth gear range DC ammeter. Module (4) and (5) share a DC microampere current meter. The experimental system can be used in instructional experiment of photoelectricity sensor, measurement, control and other related subjects which are established by information engineering, optics, physics, metrology, scientific instrumentation, automatic control and other features in institutes of science and technology. The experimental system is shown as below.

Experiment contents:
- **Experiment light source:**
  - Parameter experiment of laser diode;
  - LED parameters experiment including the electrical parameters: forward current, forward voltage, reverse current and reverse voltage, optical parameters: luminous intensity distribution, average luminous intensity, half-intensity, spectral power distribution, peak wavelength, half-width of peak wavelength and etc.;
- **Experiment of photosensitive resistance:**
  The experiment contents include: bright current of photosensitive resistor, dark current, light resistance and dark resistance experiment, experiment of spectral response characteristics of photosensitive resistance, experiment of current-illumination characteristic of photosensitive resistor, voltage-current characteristic experiment of photosensitive resistor;
- **Experiment of photoelectric cell characteristic:**
  The contents include: experiment of spectral response of photovoltaic cell, illumination - current-voltage characteristics of solar cell, voltage-current characteristic experiment of solar cell, illumination – load experiment of solar cell;
- **Experiment of photodiode characteristic:**
  The contents include: experiment of spectral response of photodiod, voltage-current characteristic experiment of photodiode, illumination characteristic experiment of photodiode;
- **Experiment of photoelectric triode characteristic:**
  The contents include: experiment of spectral response of photoelectric triode, voltage-current characteristic experiment of photoelectric triode, illumination characteristic experiment of photoelectric triode;
- **PIN photodiode:**
  The contents include: experiment of PIN photodiode dark current, illuminance characteristic experiment of PIN photodiode, spectral response characteristic experiment of PIN photodiode;

**Instrument Configuration**
- FOE-602 optical characteristics test integrated test system box.
- WDG15-Z grating monochromator.
- One-dimensional magnetic base, two-dimensional magnetic base, three-dimensional magnetic base.
- Polarizer components.
- Various types of optical detectors and light components.
- Optical experimental platform.
- Capture card.
- PC machine (optional).
- Digital multimeter (self-contained).

**Product Specifications**
- Optical Character Test Box Experimental System: Length 63cm, width 51cm, former height-9cm, back height-30cm.
- Optical experimental platform: 120cm × 80cm;
- Detectors and other accessories, see the material.
This experiment is a typical modern optical information processing experiments. The choice of instruments and appliances of the experiment and optical design, installation and adjustment are very arbitrary. The features of open in hardware and software are not only suitable for demonstration experiment; it is also a combination of theoretical and experimental synthesis experiment.

Experiment contents and related subjects:

- Main instruments in optical experiments, adjustment and it’s skill of optical path.
- Experiment of Fresnel diffraction and pinhole filter.
- Experiment of Fraunhofer diffraction.
- Experiment of Mach - Zehnder interferometer.
- Observe the interference of self-assemble Michelson interferometer.
- Assemble of Sagnac interferometer.
- Manufacture of all kinds of holographic gratings.
- Characteristics of grating parameters.
- Optical image subtraction.
- Using composite grating to achieve optical differential treatment.
- \( \theta \) modulation and pseudo-color coded modulation.
- Abbe imaging theory and spatial filtering.
- Holography: reflection hologram, transmit hologram.
- Rainbow hologram.
- Laser speckle measurement. Use the double-exposure method to measure the small displacement. Understand the causes and characteristics of laser speckle. Grasp the principle of laser speckle measurement and technology.

Features of the instruments:

- Open system, so that users can changes in attachment under certain circumstances, which makes the system more functional and powerful.
- Abundant experimental contents which covering almost all fields of optical information.
- Abundant attachments, a flexible combination which makes users to develop more unique experiment according to their own design.

Complete set of equipment:

- Various optical machine: optical experimental platform, magnetic gauge stand, line one, two, three-dimensional adjustment rack, two-dimensional angle adjustment rack, dry plate rack and etc..
- Various optical components: beam expander lens, collimating lens, Fourier lenses, reflecting mirrors, beam splitters, gratings and other specialized components.
An optical information processing experiment system is developed based on this type I optical information comprehensive system. This experiment has all the contains and characteristics of type I and it's direction is enhanced; software and hardware of the instrument are more abundant and open which allows users to self-development and design of some new experiment according to the requirements of teaching.

Experiment contents and related subjects:
- The main optical experiment instruments, optical path adjustment and skill.
- Fresnel diffraction and pinhole filter experiment.
- Fraunhofer diffraction.
- Mach-Zehnder interferometer system.
- Using self assemble Michelson interferometer to observe the interference.
- Set-up of sagenite interferometer.
- Manufacture of all kinds of holographic gratings.
- Characteristics of grating parameters.
- Optical image subtraction.
- Using composite to achieve grating optical differential treatment.
- Modulation and pseudo-color coded modulation.
- Abbe imaging theory and spatial filtering.
- Holography: reflection hologram, holographic transmission.
- Rainbow hologram.
- Photoelastic effect experiment and data processing system.
- Real-time joint Fourier related identification.
- Optical information storage.
- Laser holographical measuring.

Features of the instruments:
- Open system, so that users can changes in attachment under certain circumstances, which makes the system more functional and powerful.
- Abundant experimental contents which covering almost all fields of optical information.
- Abundant attachments, a flexible combination which makes users to develop more unique experiments according to their own design.

Complete set of equipment:
- Various optical machine: optical experimental platform, magnetic gauge stand, line one, two, three-dimensional adjustment rack, two-dimensional angle adjustment rack, dry plate rack and etc.
- Various optical components: beam expander lens, collimating lens, Fourier lenses, reflecting mirrors, beam splitters, gratings and other specialized components.
- Photoelastic data acquisition system.
- Computer and image acquisition card.
- Spatial light modulator.
- CCD camera and monitor.
35、F-GZB3030 Photorefractive effect and mass information storage of crystal

This is a typical integrated physics experiment for nonlinear optical undergraduate. The experiment includes nonlinear optical of low-intensity light, two-wave coupling theory, Bragg diffraction theory, photorefractive three-dimensional holographic data storage technology, optical Fourier transform, nonlinear optical properties of crystal material and other basic knowledge. Through experiment, students can not only understand the basic physics knowledge, but also learn some advancing edge of photonics technology. The most important thing is that the experiment can lay a good foundation for actual scientific research ability of students. Through preparing the experiment, reading the literature, observing experiment phenomenon, measuring and analyzing the experimental data and summary, the practical ability, scientific thought, experiment technology, experimental skills, techniques and so on are all obtain good exercises.

Experiment contents and related subjects:
● Observe photorefractive effect phenomenon
  ■ "fan-shape" effect
  ■ Scattered light cone
● Measurement of the basic optical properties of doped lithium niobate
  ■ Measurement of the response time
  ■ Measurement of the diffraction efficiency (crystal refractive index modulation)
  ■ Measurement of the grating (information) read out lifetime
● Three-dimensional holographic information storage experiment
  ■ Write and erase experiments of a single grating (information)
  ■ Pieces of information storage experiment - storage multiplexing mode (angle multiplexing and spatial multiplexing)

Features of the instruments:
● The experimental equipment components are open, contents are rich and more idiomatical experiment may be designed according to requirement.
● It is the practical application of the combination of basic optical knowledge and advanced photonics disciplines.

Complete set of equipment:
● Green laser (532nm).
● Various optical equipments: pinhole filter, magnetic stand, line one, two and three-dimensional adjustment frame, beam upgrade, precision rotating platform, three-dimensional rotating platforms and etc..
● Various optical components: polarization beam splitter, wave plate, beam expander lens, collimating lens, Fourier lens, reflector, flat crystal, adjustable tapered circular attenuator, photorefractive crystals and etc..
● CCD camera and monitor.
The system simulates the communication principles of wavelength division multiplex (WDM), optical cross, optical fiber communication, upstream and downstream and others in fiber communication. The entire optical fiber communication process is displayed. Crystal electro-optic effect, acousto-optic effect and laser’s internal modulation technologies are respectively used to modulate the three channels and to transmit audio signals and video images. Electro-optic effect and switching technology of liquid crystal are adopted to realize the optical signals cross, upstream and downstream of optical signal and etc..

Purpose of the experiment and related subjects:
- All-optical network.
- Wavelength Division Multiplex.
- Crosstalk, node.
- Optical cross.
- Plug-division multiplexing, signal’s upstream and downstream.
- Electro-optical characteristics of semiconductor lasers.
- Electro-optic effect of crystal.
- Acousto-optic effect.
- Electro-optic effect of liquid crystal.
- Internal modulation and external modulation of signal.
- Transmission of audio and video signal.
- Working principles and applications of photodiode, PIN photodiode, avalanche photodiode.

Features of the instruments:
- The system can not only demonstrate the basic principles of optical communications and technology, but also can carry out deep and detailed research the electro-optical properties of semiconductor lasers, electro-optical characteristics of crystals, electro-optical properties of liquid crystal and acousto-optic properties of materials. A large number of experimental devices and abundant contains are in this experiment which is the ideal presentations, research and laboratory equipment for optics and optical communications professional.

Complete set of equipment:
- Red laser 650nm, green laser 532nm, blue Laser 473nm.
- WDM prism; electro-optic effect components of crystal; electro-optic effect components of liquid crystal, CCD camera + monitor, various light reception and amplification components, optical cross-component; fiber (multi mode); multi-band power indicator, various optical lenses, prisms, polarizer, splitters, grating, optical platform; oscilloscope (self-contained) and etc.
37. **F-SPJG3050 Dual-frequency laser experimental system**

Experiment contents and related subjects:

- Zeeman effect of laser - the Zeeman splitting of He-Ne laser in the longitudinal magnetic field.
- Gain curve of He-Ne laser, the laser longitudinal mode, frequency pulling effect, dual-frequency generation, stabilization of dual-frequency laser’s frequency.
- Polarization, left-circularly polarized light, right-circularly polarized light, birefringence of crystals, 1/4 wave plate.
- Working principle of dual-frequency laser measurement system, Michelson interferometer, beat frequency, the optical Doppler effect, polarization beam splitter, pyramid prism.
- Precision measurement of length (displacement), nano-measurement (special annex is needed).
- With special accessories, measurement of linearity, flatness, angle, perpendicularity, nano-displacement measurement and measurement of other physical quantities and signal segments can be achieved.

Features of the instruments:

- Imported all hard sealed He-Ne laser is the core component of the equipment. The output power of the laser is greater than 0.8mW, TEM00; the life is more than 12,000 hours and the beat frequency is more than 700 kHz. Various types of optical components are independently collimated, and be open as far as possible. With specialized designed, production of low mechanical structure, the system is more stable, reliable and easy to be operated, comfortable. Relatively complex optical principles can effectively exercise the operation abilities and the principles understanding of students. From the laser frequency stabilization to a complete measurement system open portfolio enables users to assemble experiment devices freely or develop it into a practical system according to the actual situation and research directions.

Complete set of equipment:

- He-Ne laser and power supply; longitudinal magnetic field and adjust rack accessories; experimental host; 1/4 wave plate and three-dimensional adjustment rack; polarizer, beam splitter, the prism and the adjustment frame; light intensity probe + adjustment frame, optical film probe + adjust frame frequency, optical experiments such as rail and slide, plus or minus pulse counter (optional), phase meter (optional), FP scanning interferometer (optional), oscilloscope (self-contained) and etc..
38. FS-100 He-Ne stabilized frequency laser

This instrument is a He-Ne laser with high stability. Using imported hard sealed special high quality cavity laser tube, the laser has unlimited long storage life and its service life is 10,000 hours or more. Unique frequency stable technology and fully closed structural design, making the machine has features of compact, safe, reliable, easy to use and etc..

**The main parameters:**
- Output Power: ≥ 0.8mW.
- Power Stability: better than 1%.
- Frequency stability: better than 1 × 10^-7.
- Beam divergence angle: 1.7mrad.
- Beam to Diameter: 0.48mm.
- Laser head size: Φ32mm × 200mm.

39. F-API1 high-frequency weak signal optical amplifier

APD driver and amplifier circuit

40. F-GSFX1170 Laser beam analysis instrument

**Laser beam analyzer (system)**

Laser Beam Analyzer is an analysis equipment taking high precision CCD sensor as the detection component of the laser spot and computer is used to process and display real-time of the collected data in the advanced optical instrument. It can measure, calculate and display the spot center position, peak position, spot size of various concepts. Also, the one or two dimensions, three-dimensional light intensity distribution is very vivid displayed. The whole package of instruments include: probe, capture card, computer, related software and etc..
40、Laser power indicator

Large digital meter of three and a half. The range includes totally five steps which are tunable step, 200μW, 2mW, 20mW and 200mW.

41、multi-band laser power meter instruction

Large digital meter of three and a half. The range includes totally five steps which are the tunable step, 200μW, 2mW, 20mW and 200mW. Additionally, there are three bands which are 650nm, 532nm and 473nm.

42、F-P scanning interferometer

A high-resolution spectral analysis instrument which is mainly used in observation of laser longitudinal mode.
43. **Semiconductor laser series**

<table>
<thead>
<tr>
<th>Model</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GY-1 Semiconductor laser 650nm, 25mW</td>
</tr>
<tr>
<td>2</td>
<td>GY-2 Semiconductor laser 650nm, 15mW</td>
</tr>
<tr>
<td>3</td>
<td>GY-3 Semiconductor laser 650nm, 4mW</td>
</tr>
<tr>
<td>4</td>
<td>GY-4 Semiconductor laser 635nm, 3mW</td>
</tr>
<tr>
<td>5</td>
<td>GY-5 Semiconductor laser 532nm, 2mW (TEM00)</td>
</tr>
<tr>
<td>6</td>
<td>GY-6 Semiconductor laser 532nm, 20mW</td>
</tr>
<tr>
<td>7</td>
<td>GY-7 Semiconductor laser 532nm, 50mW (TEM00)</td>
</tr>
<tr>
<td>8</td>
<td>GY-8 Semiconductor laser 532nm, 20mW (open window)</td>
</tr>
<tr>
<td>9</td>
<td>GY-9 Semiconductor laser 532nm, 100mW (TEM00)</td>
</tr>
<tr>
<td>10</td>
<td>GY-10 Semiconductor laser 532nm, 200mW (TEM00)</td>
</tr>
</tbody>
</table>

44. **He-Ne laser series**

Using hard-sealed all-internal-cavity long-life laser tube, the laser has unlimited long storage life and its service life is 10,000 hours or more. It is fully enclosed structure.

<table>
<thead>
<tr>
<th>Model</th>
<th>Configuration</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FT-1107 Import tube</td>
<td>≥0.8mW</td>
</tr>
<tr>
<td>2</td>
<td>FT-1018 Import tube</td>
<td>≥2.5mW</td>
</tr>
<tr>
<td>3</td>
<td>FT-1037 Import tube</td>
<td>≥7mW</td>
</tr>
<tr>
<td>4</td>
<td>FT-150 Domestic tube</td>
<td>≥0.7mW</td>
</tr>
</tbody>
</table>
45. Laser of Michelson interferometer

The semiconductor laser is 635nm 3mW and the beam expander mirror is 40 times.

46. Holographic photo

47. Optical element
### Optical experiment platform

<table>
<thead>
<tr>
<th>Model</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PT-01 1200×800×80mm³</td>
</tr>
<tr>
<td>2</td>
<td>PT-02 600×400×50mm³</td>
</tr>
<tr>
<td>3</td>
<td>PT-03 1000×600×100mm³</td>
</tr>
<tr>
<td>4</td>
<td>PT-04 1200×800×160mm³</td>
</tr>
<tr>
<td>5</td>
<td>PT-05 1500×1000×200mm³</td>
</tr>
<tr>
<td>6</td>
<td>PT-06 1800×1000×200mm³</td>
</tr>
<tr>
<td>7</td>
<td>PT-07 1800×1200×200mm³</td>
</tr>
<tr>
<td>8</td>
<td>PT-08 2000×900×200mm³</td>
</tr>
<tr>
<td>9</td>
<td>PT-09 2400×1200×220mm³</td>
</tr>
<tr>
<td>10</td>
<td>PT-10 3000×1500×250mm³</td>
</tr>
</tbody>
</table>
49. Optical mechanical
1. F-YS-DF-01 Single slit diffraction demo instrument

Observe the diffraction pattern after laser through the slit and observe the changes of diffraction spot by changing the slit width.

2. F-YS-SF-02 Double slit interference demo instrument

Observe the interference pattern after laser through the double-slit.

3. F-YS-DF-03 Multiple-slit diffraction demo instrument

Observe the interference pattern after laser through the multi-slits.

4. F-YS-YK-04 Circular aperture diffraction demo instrument

Observe the toroidal interference pattern after laser through the small circular aperture.

5. F-YS-LJ-05 Hexangular aperture diffraction demo instrument

Observe the hexagonal interference pattern after laser through the hexagonal aperture.

6. F-YS-SF-06 instrument triangular aperture diffraction demonstration experiment

Observe the hexagonal interference pattern after laser through the triangular aperture.

7. F-YS-YP-07 Circular screen diffraction demo instrument

Observe the ring interference pattern after laser through the circular screen.

8. F-YS-FP-08 Square screen diffraction demo instrument

Observe the diffraction pattern after laser through the square screen.
9. F-YS-GS-09 Grating diffraction demo instrument

Observe the diffraction pattern after laser through the grating.

10. F-YS-GJD-10 Grating convolution dynamic demo instrument

Observe the diffraction pattern after laser through the two adjacent gratings and after one of them is rotated. Understand the physical meaning of convolution.

11. F-YS-ZG-11 Gylindricl wave interference demo instrument

Observe the hyperbolic diffraction pattern after laser through the two concurrent gratings.

12. F-YS-NDH-12 Newton’s ring demo instrument

Observe the equal thickness interference pattern in reflected light after laser through the Newton’s rings.

13. F-YS-PJ-13 Wedge demo instrument

Observe the equal thickness interference pattern in reflected light after laser through the pinnacle. Observe the changes of pattern by changing the inclination of the pinnacle.

14. F-YS-SLJ-14 Double prism interference demo instrument

Observe the interference pattern after laser through the edge of biprism and the two beam generated by divide wave-amplitude method meet in space.

15. F-YS-LAJ-15 Lloyd’s mirror demo instrument

Observe the interference pattern after the reflected part by Lloyd’s mirror and the unreflected part meet in space.

16. F-YS-DGG-16 Multiple-beam instrument demo instrument

Observe the multi-beam interferometer pattern after laser through the F-P interferometer and the frequency characteristic of laser. Observe the change of interference pattern through adjust the relative position of the two reflect mirrors.
17、F-YS-PZ-17 Polarization demo instrument of light

Observe the polarization phenomenon of light, the rotation phenomenon of quartz crystal, properties of 1/4 and 1/2 wave plates.

18、F-YS-JHGX-18 Fundamental optics demo instrument

19、F-YS-JSG-19 Acousto-optic effect demo instrument of crystal

Ultrasonic grating will be formed when ultrasonic wave propagating in crystal and meet the standing wave conditions. Observe the diffraction pattern and Talbot effect after laser through the grating. Change the frequency of ultrasound to observe the changes of diffraction pattern.

20、3F-YS-YSG-20 Acousto-optic effect demo instrument of liquid

Ultrasonic grating will be formed when ultrasonic wave propagating in liquid and meet the standing wave conditions. Observe the diffraction pattern and Talbot effect after laser through the grating. Change the frequency of ultrasound to observe the changes of diffraction pattern.

21、F-YS-HPG-21 Convergent polarization light interference demo Instrument

Observe the interference pattern after convergent polarized light through LiNbO3 crystal. Observe the changes of interference pattern by changing the voltage on the LiNbO3 crystal. Distinction the interference patterns generated by convergent polarized light through uniaxial and biaxial crystal.

22、F-YS-JHDG-22 Electro-optic effect demo instrument of liquid crystal

Observed the effect on the liquid crystal exerted by the liquid crystal cell.

23、F-YS-FLD-23 Faraday Effect demo instrument

Observe the rotation phenomenon (Faraday effect) when polarized light through crystal in the electromagnetic coil.

24、F-YS-JSZ-24 Birefringence demo instrument of crystal

Birefringence phenomenon will occur when light through the anisotropic crystal. Observe the birefringence phenomenon when laser through the crystal. Observe the phenomenon of e light rotate around the o light along the direction of light propagate and detect the polarization of o light and e light.
25. F-YS-GT-25 Photoelastic effect demo instrument

Photoelastic material is isotropic under normal circumstances. The material becomes anisotropic which makes the passing light generate the phenomenon of birefringence when the material is forced. Observe the color polarization when exposed by white light. Distinguish the isochromatic line and the equidifferent line.

26. F-YS-KLB-26 Spatial filter demo instrument

Abbe - Porter experiment, filtering in spectrum plane of the subject and observe the changes of image.

27. F-YS-027 "θ" modulation demo instrument

"θ" Abbe imaging principle of modulation is a clever use of the original as it converts into a modulated grating at an angle as with white light illumination and the appropriate spatial filtering processing, experimental pseudo-color coding, from which colorful image can be obtained.

28. F-YS-TXJ-28 Optical image subtraction demo instrument

Insert the image to be processed into the input surface of 4f system. Filter with a one-dimensional grating in spectrum surface and observe the subtraction of images in output surface.

29. F-YS-TWF-29 Optical image differential demo instrument

Insert the image to be processed into the input surface of 4f system. Filter with a composite grating in spectrum surface and observe the differential (edge enhancement phenomenon) of images in output surface.

30. F-YS-GXGS-30 Fiber interference demo instrument

Using fiber as the two arms of a Mach - Zehnder interferometer and accepting interference fringes using CCD camera to observe interference fringes through the monitor. By changing the temperature of part of the fiber using temperature controller, observe the change of interference fringes.

31. F-YS-XG-31 Real-time correlation identify

Familiar with the assemble of Mach - Zehnder interferometer, the use of liquid crystal light valve, the nature of the lens Fourier transform and the image correlation through arranging optical path.