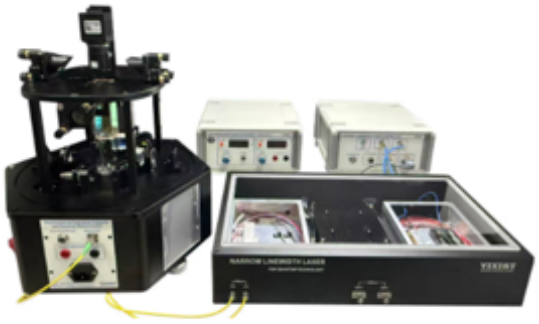
MODERN PHYSICS



XMP-6119 Quantum & Cold Atom Trapping Experiment

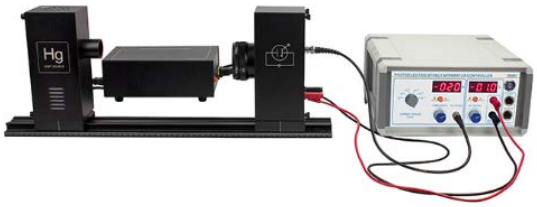
Description:

The magneto-optical trap (MOT) is a cornerstone apparatus for cold atom confinement, integrating laser cooling with the gradient magnetic field generated by anti-Helmholtz coils. This setup efficiently captures and cools alkali metal atoms, such as rubidium (Rb), cesium (Cs), and potassium (K). Subsequent advancements can facilitate cutting-edge physics experiments, including cold atom interferometry, atomic clocks, neutral atom quantum computing, and quantum simulation. This experimental platform is centered on cold atom trapping and quantum precision measurement experiments. It integrates laser optics, a vacuum system, magnetic field control, and various sensors, aiming to provide students with systematic training from fundamental principles to research applications.

YMP-6115 # Blackbody Radiation Experiment

Description:

YMP-6115 blackbody radiation experiment apparatus is designed for university modern physics teaching. Blackbody is a pure temperature radiator whose radiation is solely related to its temperature. YMP-6115 experiment apparatus adopts a voltage-stabilized bromo-tungsten light source to approximate blackbody. By altering the current, blackbody radiation in different temperatures can be obtained. The radiation curves can be measured by a NIR grating spectrometer and used to verify Wien's displacement law, Planck's law, and Stephan Boltzmann's law. The internal optical paths and structures are visible to users. An Indium Gallium Arsenic detector ensures a high S/N ratio and sensitivity in the spectral range of 800nm-2500nm.



YMP-6104A# Photoelectric Effect Experiment

Description:

YMP-6104 series photoelectric effect experiment adopts high-pressure mercury lamps as the light source. The five characteristic spectral lines (365nm, 405nm, 436nm, 546, 577nm) are filtered by an interference filter and aperture (2mm, 4mm, or 8mm) and turned into narrowband monochromatic light of fixed spot size. With the DC voltage between the anode and cathode, the monochromatic light shone on the phototube induces photocurrent, which is then amplified by a micro-current amplifier and can be measured. By studying the relationships among wavelengths, aperture size, and light intensity, Einstein's photoelectric effect theory can be verified.

Manually-adjustable high-quality potentiometer Integrated design includes a DC adjustable power supply and high-precision micro-current amplifier Integrated filters and apertures Upgrade to a digital experiment system by adding an optional wireless voltage sensor through the data logging interface.

YMP-6113 # Scanning tunneling microscope (STM）

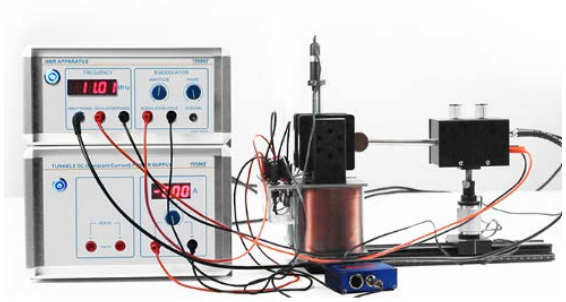
Description:

Scanning Tunneling Microscopes (STM) utilize the tunneling current that forms between an atom-scale tip of a needle and samples in external electric fields, measure the height of the needle relative to the sample surface, and delineate the microstructures of the surface. STM first-time observed the arrangement of single atoms on the material and measured related physicochemical properties in real time. Itis a major scientific breakthrough in the 1980s. YMP-6113 STM adopts a unique horizontal probe structure, overcoming the vertical microshift of the fine and coarse adjustments and enhancing the microscope's stability.

YMP-6102A # Franck-Hertz Experiment

Description:

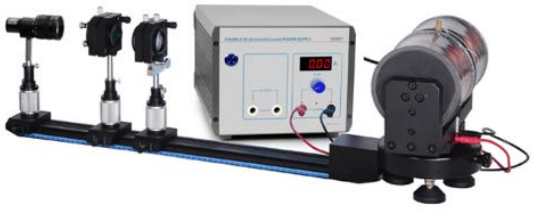
Manually-adjustable high-quality potentiometer integrated design with 4 DC adjustable power supplies and 1 high-precision micro-current amplifier expand to a digital system by equipping a wireless voltage sensor through the built-in data logging interface. Argon tube can be installed externally or in a 360o.transparent box to improve visualization.



YMP-6105 # Nuclear Magnetic Resonance Experiment

Description:

YMP-6105 is a set of teaching devices that helps students to familiarize Nuclear Magnetic Resonance (NMR) and its applications. Test samples are put in a detection coil connecting to an oscillator and are exposed to an external electromagnetic field. When the oscillation frequency of the oscillator is close to the resonance frequency of the sample, the RF field energy is absorbed by the sample, causing the arrest of the oscillation and the plunge of the output. Thereafter, the NMR signal can be detected, and the sample's g-factor can be calculated.



YMP-6101 # Zeeman Effect Experiment

Description:

YMP-6101 Zeeman effect experiment apparatus is mainly used for experimental teaching of modern physics in relevant universities and colleges to verify the effect of magnetic field on the internal of atoms, to reveal the quantum effect of internal motion of atoms, as well as to provide a method for accurate calculation of electron charge-to-mass ratio. YMP-6101 is based on the 546.1 nm spectral line of a mercury light source. The mercury light source passes through an interference filter to form a monochromatic light. The light then passes through a focusing lens and polarizing lens and forms interference circles in a French F-P (Brillouin-Perot) standard apparatus. The interference images can be captured by a CMOS camera and displayed on computers.

YMP-6107 # PN Junction Characteristic & Boltzmann Constant Experiment

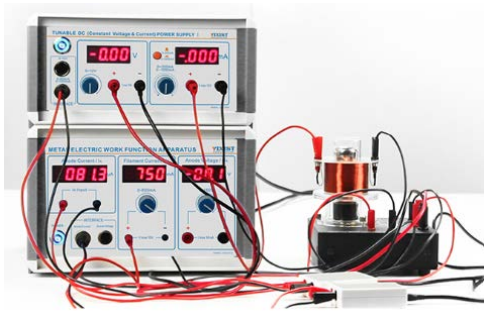
Description:

YMP-6107 is mainly used for university experimental teaching of PN Junction Characteristics and the Boltzmann Constant. The experiment apparatus adopts a microcurrent source as the forward current of the PN junction. By changing the forward current and measuring the forward voltage drop, the volt-ampere characteristics curve of the PN junction can be obtained. YMP-6107 is also equipped with a temperature-controlled device to measure the volt-ampere characteristics of the PN junction at different temperatures and calculate the Boltzmann constant k, sensitivity S, and the forbidden bandwidth of silicon materials.

YMP-6108 # Metal Electric Work Function Experiment

Description:

YMP-6108 is used for university experimental teaching of the metal electron work function. The device uses coaxial tungsten filaments and metal rings as the cathode and anode materials. Two insulative shielded electrodes with the same voltage as the anode are added at both ends of the anode to prevent fringe effects, e.g., cold end effect and uneven electric field. When the hot electrons within the heated filament acquire energy greater than the work function, the electrons escape and form an emission current. Using the Fermi-Dirac quantum statistical distribution law of electron energy in metal, the hot electron emission formula can be calculated, and the work function can be obtained.



YMP-6109 # Ideal Vacuum Diode Comprehensive Experiment

Description:

YMP-6109 modern physics experiment apparatus is for university teaching of ideal vacuum diode-related experiments. It is an expansion of the YMP-6108 Metal Electron Work Function Experiment apparatus. A solenoid coil and power supply are added. Apart from measuring the metal's work function, YMP-6109 can also detect the electron movement in a radial electric field and axial magnetic field and study the Fermi-Dirac distribution and the volt-ampere characteristics of ideal vacuum diodes.

YMP-6114 # Atomic force microscope (AFM)

Description:

Atomic force microscopes (AFM) use a highly sensitive microcantilever (microprobe) as a force sensor to detect the atomic force between the cantilever tip and the sample and thus delineate the microstructure of the sample's surface. YMP-6114 AFM adopts a unique horizontal probe structure, overcoming the vertical micro-shift of the fine and coarse adjustments and enhancing the microscope's stability.

YMP-6112 # Comprehensive Microwave Optics System

Description:

YMP-6112 comprehensive microwave (MW) optics system studies the wave characteristics of MW, e.g., diffraction, interference, and polarization. MW is an electromagnetic wave in the range of 300Mz-3000GHz. In the YMP-6112 system, MW is emitted from a signal source, passes through single/two slits and polarizing plates, and is received by a receiver. By studying the diffraction, interference, and polarization images of the MW, the wave characteristics of MW can be testified.

YMP-6110 # Giant Magnetoresistance Effect Experiment

Description:

YMP-6110 is for the university teaching of the Giant Magnetoresistance (GMR) Effect and its applications. GMR Effect is a phenomenon in which the resistivity of a magnetic material varies significantly in applied external magnetic fields of different magnitudes. It is a quantum mechanical effect arising from the thin magnetic film structure, in which thin layers of alternating ferromagnetic and nonferromagnetic materials stack on top of each other. When the magnetic moments of the ferromagnetic layers are parallel, the spin-related scattering of carriers is minimized, and the material resistance is minimal. When the magnetic moments are antiparallel, the material resistance is maximal. YMP-6110 contains four experimental units: the GMR basic characteristics unit, GMR sensor measuring current unit, GMR sensor measuring angular unit, and GMR sensor reading magnetic card unit.

YMP-6116 # Spectrometer and Atomic Spectroscopy Experiment

Description:

The essence of light is a kind of electromagnetic radiation, which is a form of matter movement. It is the external expression of the internal movement of molecules and atoms of matter in the form of radiated energy. It was through observing and studying the spectrum of hydrogen atoms that people began to study the atomic structure. YMP-6116 atomic spectroscopy experimental device mainly includes: light sensor, rotation sensor, slit, lens, guide rail, bracket, light source (hydrogen lamp, helium lamp, mercury lamp, sodium lamp, etc.) light source. The experimental device has a simple structure with convenient light path adjustment, allowing students to fully understand and master the principles and structure of spectroscopic instruments. At the same time, the device also uses advanced sensor technology and intelligent software to achieve continuous data collection and real-time drawing of experimental data curves, powerful equation editing functions, which greatly improve the efficiency of experiments, allowing students to devote more energy to the principle learning, operation, data analysis and result discussion of the experiment itself, and be more able to have a thorough academic qualification, understanding and mastery of experiments .

YMP-6117 # Millikan Oil Drop Experiment

Description:

The YMP-6117 Millikan oil drop experimental device controls the charged oil droplets in a uniform electric field, uses a CCD imaging system, observes and measures the movement of the charged oil droplets in the uniform electric field and gravitational field, and calculates the charge of the entire oil droplet. After repeating the experiment on many oil droplets, Millikan found that the total charge value of all oil droplets was a multiple of the same number, so he determined that this value was the charge of a single electron: e=1.602^-19 coulomb. This experimental device is classified according to the mode of movement, and the oil drop method for measuring electron charge is divided into a balanced measurement method and a dynamic measurement method. The experimental system consists of a host, a CCD imaging system, an oil drop box, a sprayer and other components, among which the host includes controllable high-voltage power supply, a timing device, A/D sampling, data communication and other unit modules.

OPTICS

YTR-6311 # VIS Spectroscopy Experiment

Description:

This experiment, based on the principle of grating diffraction spectroscopy, utilizes an array detector, optimized optical path and circuit design, and miniaturized visible-near-infrared light source technology to develop a compact visible-near-infrared spectral analyzer operating from 350-1050 nm with a resolution of approximately 1.5 nm.

YTR-6315 # UV-VIS Spectroscopy Experiment

Description:

Based on the principle of grating diffraction spectroscopy, this experiment utilizes an array detector and linear variable filter technology, optimized optical path and circuit design, and miniaturization of a ultraviolet-visible (UV-Vis) light source to develop a UV-Vis spectrophotometer with a wavelength range of 180-1100 nm and a resolution of approximately 1.5 nm.

YGP-6215 # Equal-Thickness Interference Experiment

Description:

The phenomenon of equal-thickness interference of light, a crucial experiment in wave optics for demonstrating light's wave nature, is vividly illustrated by classic setups like Newton's rings and wedge fringes, which showcase the principle that "identical fringe patterns form at locations of equal thickness."

YEK-6706 # Comprehensive Optical Experiment

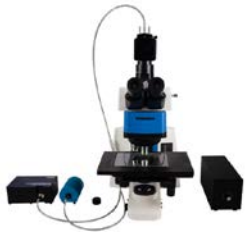
Description:

Optics, a pivotal branch of physics, forms the bedrock of modern optoelectronic information technology. The integrated digital optics experimental system is designed around core principles of wave and geometric optics, synergizing classical optical experiments with contemporary sensor technology and digital measurement techniques. The apparatus encompasses wave optics experiments such as light interference, diffraction, and polarization, alongside geometric optics experiments like the measurement of lens focal length.

YGP-6212 # Lens Focal Experiment

Description:

The focal length of a lens is one of the most fundamental and critical parameters in geometrical optics. This experimental apparatus integrates three classic measurement techniques: the autocollimation method, the secondary imaging method (Bessel's method), and the parallel light tube method, to enable students to systematically master the imaging principles of thin lenses and focal length measurement techniques.



YTR-6310 # Microscopic Reflectance Spectroscopy Experiment

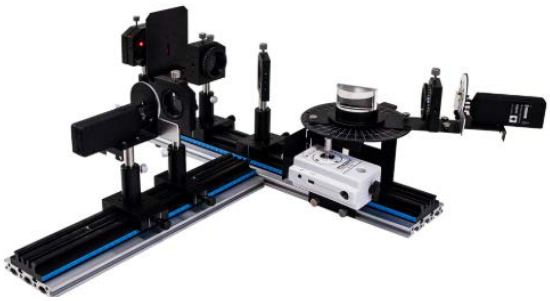
Description:

The microspectroscopy experiment combines the real-time imaging of tiny areas by a microscope with the real-time acquisition of micro-spectral data, enabling the measurement of reflectance spectra and colorimetric parameters of micrometer-scale samples.

YTR-6305 # Modular Spectral Analysis Experiment

Description:

The spectral analysis application kit primarily consists of a cooled halogen tungsten light source, a miniature spectrometer, optical fibers, a transmittance measurement module, a reflectance measurement module, a standard whiteboard, and sample holders. It is mainly used for educational experiments involving transmittance measurement of solid and liquid samples, concentration analysis, reflectance measurement, and chromaticity assessment.



YTR-6316 # Brewster's Angle Experiment

Description:

Brewster's angle is a concept of significant theoretical and practical value in optics, describing a unique polarization phenomenon that occurs at the interface of two different media during refraction and reflection. When incident light strikes the medium interface at this specific angle, a distinct physical effect arises: the reflected light becomes linearly polarized with its vibration direction entirely perpendicular to the plane of incidence, while the transmitted light becomes partially polarized, predominantly in the parallel component.

XGP-6202 # Spectrometer Experiment

Description:

The spectrometer, also referred to as an angle-measuring instrument, is a common optical device primarily consisting of three core components: a collimator, a sample platform, and a telescope. As a precision optical instrument used to measure the angle of light deflection, the spectrometer can determine various physical quantities, including the wavelength of light waves, the angles of prisms, the refractive index of materials, the dispersion rate, and the grating constant.

XTR-6314 # Michelson Interference Experiment

Description:

The experimental setup embodies the design principles and optical path concepts of the Michelson interferometer, encompassing various topics such as coherence, amplitude division interference, equal inclination interference, equal thickness interference, localized interference, non-localized interference, point light sources, extended light sources, white light interference, interference visibility, transformation methods, cumulative amplification, and wavelength determination of light sources.

	**YEL-3022 # F-P Confocal Spherical Scanning Interferometer** **Description:** The F-P confocal spherical scanning interferometer is a spectroscopic instrument with high resolution and has become an important measurement equipment in laser technology. In experiments, it is used to display all longitudinal and transverse modes with very small frequency differences (tens or hundreds of MHz) that cannot be distinguished by the eyes and general spectral instruments into a spectrum diagram for observation. It plays an irreplaceable important role in the experiment.
	**YTR-6308 # Multifunction Grating Spectrometer** **Description:** YTR-6308 multi-functional grating spectrometer is a grating as a spectrometer of spectral components, its basic principle is that when light beams of different wavelengths are incident on the grating at the same angle of incidence, different wavelengths of light beams at the same level of diffraction of the main position is different, so as to achieve the purpose of spectroscopy. Its advantage is a wide spectral measurement range and high resolution, comprehensive performance is outstanding, is currently the most widely used spectral instruments. The grating spectrometer is designed for physics experimental teaching open structure design, students can intuitively view the internal optical path and structure of the spectrometer. At the same time, the photomultiplier tube and linear CCD as a photoelectric sensor, both high-resolution spectra can be obtained, but also can quickly obtain a wide spectrum. It enables students to more fully understand and master the working principle of the spectrometer. The instrument can be well used in experiments such as hydrogen-deuterium spectroscopy experiments, sodium atomic spectroscopy, etc.
	**YTR-6307 # LiDAR Experiment** **Description:** YTR-6307 LiDAR experiment adopts LiDAR 3D scanning technology and infrared imaging detection technology. By testing different samples, designing multi-dimensional experimental operations, realizing automatic collection and processing of sample point cloud images, obtaining distance, reflection intensity, spatial coordinates and other information, to achieve digitization experiment. Students learn and understand the optical properties and applications associated with LiDAR.

YGP-6213 # Light Interference and Diffraction Experiment

Description:

The phenomena of interference and diffraction of light are important elements of fluctuation optics. The light interference phenomenon used to be the cornerstone of laying down the light fluctuation, which has important significance in fluctuation optics. The light diffraction phenomenon, on the other hand, is a phenomenon that cannot be explained by geometrical optics in the propagation of light beams, and is one of the main signs of light fluctuation. The study of light interference and diffraction not only helps to further deepen the understanding of the volatility of light, but also helps to further study the modern optical experimental techniques, such as spectral analysis, crystal structure analysis, holography, optical information processing. This experiment is carried out simultaneously with single slit, multiple slits, circular holes, square holes, etc., which can show the characteristics of diffraction and interference distinctly, and the light intensity distribution detector used to measure the relative distribution of light intensity enables to provide the real time relationship curve between light intensity and position. Meanwhile with the surface-array camera, the digitization of the experiment is easily realized to study on the two-dimensional light intensity distribution of diffraction images.

YGP-6214 # Light Polarization Experiment

Description:

Light polarization phenomenon is an important part of wave optics. Various optical components and instruments developed by this phenomenon are extremely important and widely used in the detection of material structure, laser and optoelectronic technology. The YGP-6214 light polarization experimental device mainly consists of: light sensor, rotation sensor, laser, precision mounts, lifting mounts, posts and observation screen. This experimental device uses advanced sensor technology and intelligent software to achieve continuous data collection and real-time drawing of experimental data curves, which greatly improves the experimental efficiency and allows students to devote more energy to the principle learning and data analysis of the experiment itself, and be able to learn, understand and master the experiment thoroughly.

YMP-6112 # Comprehensive Microwave Optics System

Description:

YMP-6112 comprehensive microwave (MW) optics system studies the wave characteristics of MW, e.g., diffraction, interference, and polarization. MW is an electromagnetic wave in the range of 300Mz-3000GHz. In the YMP-6112 system, MW is emitted from a signal source, passes through single/two slits and polarizing plates, and is received by a receiver. By studying the diffraction, interference, and polarization images of the MW, the wave characteristics of MW can be testified.

YMP-6116 # Spectrometer and Atomic Spectroscopy Experiment

Description:

The essence of light is a kind of electromagnetic radiation, which is a form of matter movement. It is the external expression of the internal movement of molecules and atoms of matter in the form of radiated energy. It was through observing and studying the spectrum of hydrogen atoms that people began to study the atomic structure. YMP-6116 atomic spectroscopy experimental device mainly includes: light sensor, rotation sensor, slit, lens, guide rail, bracket, light source (hydrogen lamp, helium lamp, mercury lamp, sodium lamp, etc.) light source. The experimental device has a simple structure with convenient light path adjustment, allowing students to fully understand and master the principles and structure of spectroscopic instruments. At the same time, the device also uses advanced sensor technology and intelligent software to achieve continuous data collection and real-time drawing of experimental data curves, powerful equation editing functions, which greatly improve the efficiency of experiments, allowing students to devote more energy to the principle learning, operation, data analysis and result discussion of the experiment itself, and be more able to have a thorough academic qualification, understanding and mastery of experiments .

YOA-8403 Laser Measurement Kit

Description:

The system is mainly used to measure the center wavelength, half-height width and power of laser and other important performance indicators of laser. The device is modularly designed and mainly consists of a spectrometer, an optical power meter and an integrating sphere, and uses professional measurement software to measure the center wavelength, half-height width and power of the laser simultaneously. It is suitable for measuring luminescent devices such as laser diodes, laser diode assemblies, and dispersive monochromatic light sources, and can be customized for users for production lines.

YOA-8404 series # Spectroradiometer

Description:

Radiometry is the science of electromagnetic radiation energy measurement, applicable to the entire electromagnetic waveband. Irradiance (irradiance) is defined as the power per unit area of electromagnetic radiation incident on a curved surface, understood intuitively as the quantized value of energy at the point of incidence, in physical units of watts per square meter (W/m^2). The irradiance measurement kit consists of a spectrometer, an optical fiber, a cosine corrector, and a holder. Among them, the spectrometer is connected to the cosine corrector with known surface area through optical fiber. The whole system is radiometrically calibrated by NIST traceable standard light source, which can realize the detection of UV intensity in each wavelength band such as UVA, UVB and UVC, and the accurate measurement of a series of parameters such as irradiance, radiation flux and radiation intensity in a specific wavelength band. Device testing is simple, easy to use, can be widely used in UV disinfection lamps, UV fluorescent lamps irradiation intensity measurement, LED light radiation safety measurement and other research fields.

	**Fluorescence Measuring Device for Solid Materials** **Description:** The fluorescence holder is designed to collect fluorescence spectra at 0° using a 45° incident laser light source. The holder is compact enough to start experimental measurements as soon as the holder is placed firmly on the sample surface.
	**Fluorescence Measuring System for Liquid or Powder Materials** **Description:** Fluorescence is the electromagnetic radiation emitted by a substance absorbing light or other electromagnetic radiation. A common example is the visible fluorescence from materials that absorb ultraviolet light. Different techniques have been developed for the fluorescence measurement of materials of different states. For liquids, cuvettes are used for sampling, and the fluorescence spectrum of excitation is measured in the direction of 90oof incident light; for solids, an optic fiber holder can be used to form a 45o angle between the incident light and the resulting fluorescence and, therefore, measure the spectrum; For powder samples, a hemispherical integrating sphere with the sample positioning in the middle can be adopted —after diffuse reflections in the sphere, the fluorescence can be collected and analyzed. Fluorescence measurement is widely used in high-resolution optics, medicine, chemistry, special lightning, etc.
	**YME-2003 # Optical Precision Adjustment Frame** **Description:** The Optical Precision Adjustment Frame YME-2003 utilizes fine-tooth adjustment screws and can be combined with a horizontal adjustment frame to achieve 3D adjustment. This frame is ideal for the fixation and adjustment of optical lenses with a diameter ranging from 0.5" to 1".
	**YLS-8302-06 # Hydrogen Light Source** **Description:** The YLS-8302-06 hydrogen light source is a cold cathode glow discharge tube, which consists of a pair of nickel electrodes enclosed in a rigid glass case. The tube is filled with high purity hydrogen gas and emits the characteristic spectrum of hydrogen when activated by high pressure.

ELECTROMAGNETISM

YGP-6252 # Magnetic Levitation Experiment

Description:

Magnetic levitation technology is a quintessential mechatronic discipline, integrating electromagnetism, electronic technology, control engineering, signal processing, and dynamics. The advancement of electronic technology, control engineering, signal processing, electromagnetic theory, and novel electromagnetic materials has propelled magnetic levitation technology forward, enabling its widespread application in numerous fields.

YGP-6261 # RLC Circuits and Micro-Displacement Experiment

Description:

This experimental apparatus is designed as a modular, integrated system for comprehensive university physics instruction. It consolidates two primary experimental functionalities: the analysis of transient and steady-state characteristics of RLC circuits, and the measurement of minute displacements using a variable capacitor. The system concurrently addresses circuit theory pedagogy and precision sensing technology, making it suitable for foundational and modern physics laboratory courses in university science and engineering programs.

YEK-6705 # Comprehensive Magnetism Experiment

Description:

Magnetism is a core foundation of physics and electromagnetic technology, with applications spanning energy, transportation, medicine, and information fields, from the law of electromagnetic induction to modern magnetic sensing technology. This comprehensive magnetic experimental setup covers classic experiments such as magnetic field distribution mapping, verification of the law of electromagnetic induction, measurement of Ampere's force, and Lenz's law experiments.

YGP-6244 # Geomagnetic Field Experiment

Description:

The geomagnetic field is a critical physical characteristic of the Earth, exerting significant influence on the environment and biological life. It is closely related to various application domains, including navigation and positioning, medical diagnostics, radiation protection, geoscientific research, and magnetic power generation.

YGP-6256 # Oscilloscope Voice-Controlled Image Generation Experiment

Description:

The oscilloscope voice-controlled image generation experiment is an innovative interdisciplinary platform integrating digital art, analog electronic technology, and modern speech recognition. It transforms abstract electrical principles into intuitive visual art by dynamically drawing various images through a traditional oscilloscope apparatus. This setup serves not only as an experimental device but also as a bridge connecting theoretical knowledge with engineering practice, science with humanities.

YGP-6245 # Faraday's Law of Electromagnetic Induction Experiment

Description:

A coil oscillating within a magnetic field induces an electromotive force due to magnetic flux cutting, providing a direct experimental validation of Faraday's law of electromagnetic induction and Lenz's law. When the coil undergoes periodic oscillation in a uniform magnetic field, the alternating voltage generated across its terminals can be measured to quantitatively analyze the relationship between induced emf and the rate of change of magnetic flux, thereby confirming the mathematical expression ε = -dΦ/dt.

YGP-6246 # Ampere's Law Experiment

Description:

Ampère's law is a fundamental principle in electromagnetism that describes the relationship between steady current and static magnetic fields. It reveals the intrinsic connection between electricity and magnetism, laying the groundwork for Maxwell's unified electromagnetic field theory. Studying Ampère's law aids in analyzing highly symmetric current distribution systems, such as the circular magnetic field around an infinitely long straight conductor and the uniform magnetic field within a solenoid.

YGP-6249 # Electron Charge-to-Mass Ratio Experiment

Description:

The electron charge-to-mass ratio (e/m) is a commonly used physical constant, defined as the ratio of the charge of an electron to its mass. Through modern scientific techniques, the standard value of the electron charge-to-mass ratio has been determined to be 1.759×10^11 C/kg. There are various methods for measuring the electron charge-to-mass ratio in physical experiments. This particular experimental apparatus is based on the approach of the British physicist J.J. Thomson, utilizing the deflection of an electron beams trajectory in a magnetic field to conduct the measurement.

YGP-6242 # Electricity Meter Modification and Calibration Experiment

Description:

An unmodified ammeter, commonly referred to as a meter head, has a very low current capacity, approximately 10^-6 amperes. By connecting it in parallel or in series with a resistor and utilizing a high-precision calibration meter, it can be transformed into ammeters and voltmeters with varying ranges and accuracies. Mastering the techniques of meter modification and calibration is essential for a deeper understanding of meter performance and its applications. This experimental setup aims to convert a microammeter head into voltmeters, ammeters, and ohmmeters with different ranges, while employing a high-precision digital multimeter for calibration, and simultaneously learning the usage of voltage and current sensors. This experiment encompasses fundamental concepts of electromagnetism, including current, voltage, resistance, meters, power supply, current regulation, voltage division, and electrical sensors. Through this experiment, students will gain insights into the performance and operational methods of basic electrical instruments, while also becoming familiar with the standard operating procedures for electromagnetism experiments.

YGP-6234 # Helmholtz Coil Experiment

Description:

Helmholtz coils are a pair of parallel and connected coaxial circular coils, with the currents in the two coils in the same direction and magnitude. When the distance d between the coils is exactly equal to the radius R of the circular coil, this circular current-carrying coil is called a Helmholtz coil. The characteristic of this coil is that it can generate a wide uniform magnetic field near the midpoint of its common axis. Therefore, it has great practical value in production and scientific research, and is also often used as a measurement standard for weak magnetic fields.

YMP-6106 # Hall Effect Experiment

Description:

YMP-6106 is mainly used for experimental teaching of Hall effect in universities. If a current carrier is perpendicular to a magnetic field, an additional transverse electric field will be generated in the direction perpendicular to the current and the magnetic field. This phenomenon is called the Hall effect. YMP-6106B Hall effect experiment apparatus adopts a cuboid semiconductor sample placed in a uniform electromagnetic field. When a current is passed through the cuboid sample, the Hall effect produces a potential in the direction perpendicular to the current and the magnetic field of the sample, that is, Hall voltage.

YES-6401 # New Energy Experiment

Description:

YES-6402 Solar Cell Characteristics Experiment adopts an iodine-tungsten lamp to imitate a solar light source. The light shines on a solar panel and generates current. YES-6402 experiment measures the irradiance of a light source at different distances, mapping the I-D curve, and then measures the output characteristics of different solar cells (Monocrystalline silicon, polysilicon, amorphous silicon) at different distances, and calculates short-circuit current (ISC), open circuit voltage (UOC), maximum output power (Pmax), and fill factor (FF). FF is an important parameter in appraising solar cell performance.

YGP-6201 # Energy Transmission Experiment

Description:

YGP-6201 Experiment of Energy Transmission Characteristics in Electromagnetic Field apparatus is for university teaching of general physics. It adopts the principle of magnetic coupling resonance (MCR), which brings about a higher transmission efficiency than inductive magnetic field coupling and is impervious to non-magnetic obstacles. YGP-6201 includes a pair of resonance coils. One, as a transmitter powered by a high-frequency AC power supply, produces magnetic energy. Another, as a receiver, receives and converts the magnetic field into electric energy, powering fans or LED. The distance and relative angles of coils, the load resistance, and the transmission media can be altered to study the factors influencing transmission efficiency.

YES-6402 # Solar Cell Characteristic Experiment

Description:

YES-6402 Solar Cell Characteristics Experiment adopts an iodine-tungsten lamp to imitate a solar light source. The light shines on a solar panel and generates current. YES-6402 experiment measures the irradiance of a light source at different distances, mapping the I-D curve, and then measures the output characteristics of different solar cells (Monocrystalline silicon, polysilicon, amorphous silicon) at differentdistances, and calculates short-circuit current (ISC), open circuit voltage (UOC), maximum output power (Pmax), and fill factor (FF). FF isan important parameter in appraising solar cell performance.

YEL-3029 # Teslameter

Description:

YEL-3029 Teslameter can be used to measure the magnetic intensity of the DC magnetic field. The portable Teslameter has features of a wide range, easy operation, and an extended interface for data logging through an optional voltage sensor.

YGP-6209 # DC Bridge Experiment

Description:

This experiment learns the knowledge points of DC bridge to measure resistance, exchange (change arm) method, multiplier selection, bridge sensitivity measurement, resistivity measurement, etc. The experimental device can complete the basic content of DC bridge experiments, enhance the content, advanced content and high-level content, to achieve hierarchical teaching.

YGP-6207 # RLC Circuit Experiment

Description:

This experiment includes the study of transient process of RLC circuit and the study of RLC resonant circuit characteristics. The studied knowledge points are the characteristics of transient process of current and voltage in RL, RC and RLC circuits, the definition and measurement method of exponential decay time constant, the definition and measurement method of decay oscillation period and time constant, the usage and parameter selection of RC differential circuit, the usage and parameter selection of RC integral circuit and the characteristics of RLC circuit steady state, resonance, amplitude frequency characteristics, phase frequency characteristics, high pass circuit, low pass circuit, the upper limit frequency, lower limit frequency, cutoff frequency, passband width, resonant frequency, inductance, capacitance, quality factor, frequency selection, grounding, voltage resonance, current resonance, phase difference measurement, etc. The experimental device can realize the level teaching of RLC circuit experiment, and complete the basic content, advanced content, and high-level content.

YGP-6210 # Voltammetric characteristics of nonlinear components

Description:

This experiment is to learn the knowledge points of Ohm's law, voltammetric characteristics, static resistance, dynamic resistance, nonlinear components, the working principle of diodes and forward conducting characteristics, reverse breakdown characteristics, voltage regulation characteristics, etc. This experimental device can complete the basic content, upgrade content, advanced content and advanced content of the experiment of voltammetric characteristics of nonlinear components to achieve hierarchical teaching.

YGP-6208 # Oscilloscope principle and application experiment

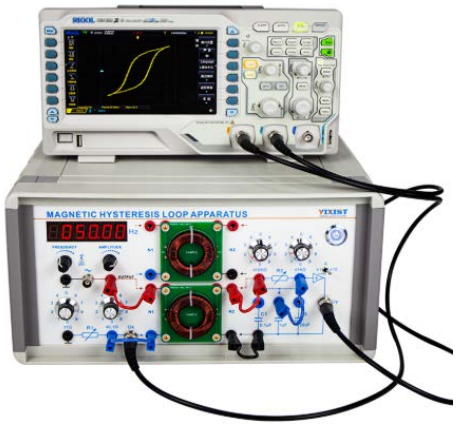
Description:

This experiment learns the knowledge points of AC signal amplitude, period, frequency, phase and oscilloscope horizontal system, vertical system, trigger system, waveform formation principle and other concepts. This experimental device can complete the basic content of the oscilloscope principle and its application experiments, enhance the content and advanced content to achieve hierarchical teaching.

YEK-6703 # Comprehensive Electrical Experiment

Description:

The Comprehensive Electrical Experiment is an open-ended teaching experimental instrument designed for university physics laboratories to conduct experiments such as measuring the volt-ampere characteristics of electrical components, measuring the characteristics of optoelectronic components, the principle and application of bridge circuits, the principle and application of RLC circuits, and the principle and application of integrated amplifiers.



YGP-6230 # Hysteresis Loop Experiment

Description:

YGP-6230 hysteresis loop experiment is an experimental project specially used to measure the magnetic properties of magnetic materials. It mainly uses the electromagnetic induction method to determine the hysteresis loop, saturation magnetic induction intensity, coercive force and other parameters by measuring the magnetization characteristics of ferromagnetic materials under an external magnetic field. The hysteresis loop is the most obvious feature of ferromagnetic materials. According to the shape of the hysteresis loop, ferromagnetic materials can be divided into two categories: soft magnetic and hard magnetic. (The former has a long and narrow hysteresis loop, small coercive force, remanence and hysteresis loss; the latter has a wider hysteresis loop, large coercive force and strong remanent magnet).

	**YGP-6235 #Ampere Force Experiment** **Description:** The YGP-6235 Ampere force experimental device uses a high-precision four-scale balance (resolution 0.01g) to measure the Ampere force generated by a current-carrying wire in a magnetic field. The Ampere force is the force exerted on a current-carrying wire in a magnetic field, which can be expressed as follows: a straight wire with a length of L and a current intensity of I is placed in a uniform external magnetic field with a magnetic induction intensity of B. The magnitude of the Ampere force exerted on the wire is F= IL x B, and the directions of I, B and F are determined by the left-hand rule. This experimental device uses conductors of different lengths to measure the effect of length on the Ampere force, uses magnetic fields of different intensities to measure the relationship between magnetic field intensity and Ampere force, and changes the current of the wire to measure the relationship between the Ampere force and the current.
	**YMP-6110 # Giant Magnetoresistance Effect Experiment** **Description:** YMP-6110 is for the university teaching of the Giant Magnetoresistance (GMR) Effect and its applications. GMR Effect is a phenomenon in which the resistivity of a magnetic material varies significantly in applied external magnetic fields ofdifferent magnitudes. It is a quantum mechanical effect arising from the thin magnetic film structure, in which thin layers ofalternating ferromagnetic and nonferromagnetic materials stack on top of each other. When the magnetic moments of theferromagnetic layers are parallel, the spin-related scattering of carriers is minimized, and the material resistance is minimal. When the magnetic moments are antiparallel, the material resistance is maximal. YMP-6110 contains four experimentalunits: the GMR basic characteristics unit, GMR sensor measuring current unit, GMR sensor measuring angular unit, andGMR sensor reading magnetic card unit.

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Thermodynamics

YEK-6702 # Comprehensive Thermal Experiment

Description:

The thermodynamics comprehensive experimental apparatus is a multifunctional educational platform integrating the study of thermodynamic principles, gas laws, and energy conversion processes. The experimental suite primarily encompasses the verification of the ideal gas law, heat engine cycle analysis, and specific heat capacity ratio measurement, with capabilities for absolute zero temperature determination.

YGP-6238 # Thermal Engine Cycle Experiment

Description:

The air thermodynamic engine experimental apparatus is a multifunctional educational platform integrating principles of thermodynamics, gas laws, and energy conversion research. Through visualized thermodynamic cycle processes, this device intuitively demonstrates the conversion mechanism of thermal energy into mechanical work, validates core theories such as the First Law of Thermodynamics and the Ideal Gas Law, and supports advanced experiments including absolute zero measurement and specific heat ratio determination. It is suitable for university physics, engineering thermodynamics courses, and scientific research, facilitating students' in-depth understanding of thermal efficiency, Carnot cycles, and gas behavior laws.

YGP-6237 # Specific Heat Ratio Experiment

Description:

The air heat engine experimental apparatus is a multifunctional educational platform integrating thermodynamics, gas laws, and energy conversion research. This experiment employs a heat engine device in which a piston undergoes simple harmonic oscillation within a cylinder, causing the gas to experience adiabatic compression and expansion. By analyzing the pressure-volume relationship, the specific heat ratio (γ) of air is determined.

YGP-6253 # Ideal Gas Law Experiment with Electric Heating

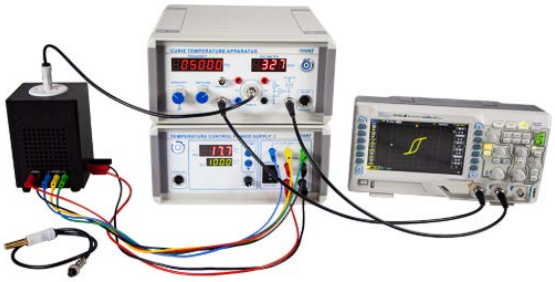
Description:

The ideal gas law, also known as the ideal gas equation or universal gas law, describes the relationship between pressure, volume, amount of substance, and temperature of an ideal gas in equilibrium. It is based on empirical laws such as Boyle's law, Charles's law, and Gay-Lussac's law. This experiment aims to validate the ideal gas law by measuring the pressure (p), volume (V), and temperature (T) of a fixed mass of gas sealed within a transparent electric heating tube.

YGP-6236 # Ideal Gas Law and Absolute Zero Experiment

Description:

The ideal gas is a simplified model established by humans to represent real gases, and the ideal gas law is a state equation that describes the relationship between pressure, volume, and temperature of an ideal gas at equilibrium. The ideal gas law is crucial for understanding gas behavior, thermodynamic processes, and the applications of gases in engineering and science. In engineering, it finds extensive use, particularly in the design of gas dynamics, thermodynamic cycles, and gas transmission and storage systems. This experiment employs a piston apparatus and fixed-volume thermal conductive spheres equipped with pressure and temperature sensors to control isothermal and isochoric conditions to validate the ideal gas state equation. The topics covered in this experiment include the definition of an ideal gas, the three fundamental laws, isothermal processes, isobaric processes, and isochoric processes. Through this experiment, students can develop skills in measuring temperature and pressure, estimating measurement errors in thermodynamic quantities, and analyzing the causes of these errors.



YMP-6118 # Curie Temperature Experiment

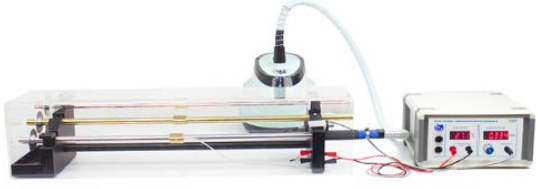
Description:

YMP-6118 Curie Temperature Experiment is an experimental instrument specially used to measure the Curie point of magnetic materials. For ferromagnetic materials, due to the existence of magnetic domains, hysteresis will occur under the action of an external alternating magnetic field. The hysteresis loop is the main manifestation of hysteresis. If the ferromagnetic material is heated to a certain temperature, due to the intensification of thermal motion in the metal lattice and the destruction of the magnetic domain, the ferromagnetic material will transform into a paramagnetic material, and the hysteresis phenomenon will disappear. This transition temperature of ferromagnetic materials is called the Curie point. There are two coils N1 and N2 on the ring-shaped ferromagnetic material in this experiment. N1 is the excitation coil.

YGP-6218 # Temperature Sensor Calibration and Application Experiment

Description:

The YGP-6218 temperature sensor calibration and application experiment is an experiment to explore the quantitative relationship between the electrical characteristics and temperature of temperature sensors. A temperature sensor is a device used to measure temperature. It usually consists of thermistors, thermocouples, IC temperature sensors and resistance temperature detectors. These sensors measure temperature by the fact that the electrical resistance or physical properties of various materials change with temperature.



YGP-6203 Metal Thermal Expansion Coefficient Experiment

Description:

The phenomenon of expansion and contraction of objects due to temperature changes is called "thermal expansion". Its changing ability is the change in length caused by a unit temperature change under constant pressure (p is constant), which is the thermal expansion coefficient. The coefficient of expansion is the average elongation of a unit length of material in a certain temperature range for each degree of temperature increase. Generally speaking, solids expand the same in all directions. Therefore, the linear

	expansion law of a solid in one direction can be used to characterize its volume expansion.
	**YMP-6115 # Blackbody Radiation Experiment** **Description:** YMP-6115 blackbody radiation experiment apparatus is designed for university modern physics teaching. Blackbody is a pure temperature radiator whose radiation is solely related to its temperature. YMP-6115 experiment apparatus adopts a voltage-stabilized bromo-tungsten light source to approximate blackbody. By altering the current, blackbody radiation in different temperatures can be obtained. The radiation curves can be measured by a NIR grating spectrometer and used to verify Wien's displacement law, Planck's law, and Stephan Boltzmann's law. The internal optical paths and structures are visible to users. An Indium Gallium Arsenic detector ensures a high S/N ratio and sensitivity in the spectral range of 800nm-2500nm.

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MECHANICS

YGP-6221 # Gravitational Acceleration Experiment

Description:

By varying the pendulum length and employing a photogate to measure the oscillation period, the local gravitational acceleration (g) can be calculated. To ensure precise measurement of gravitational acceleration, the experiment involves accurate length measurements using vernier calipers and rulers, as well as employing an intelligent photogate for timing.

YEK-6704 # Comprehensive Mechanics Experiment

Description:

Mechanics forms the foundation of physics, encompassing a broad spectrum of phenomena from particle motion to vibrations, collisions, and energy transformations. This comprehensive mechanics experimental apparatus integrates classic experiments such as determining gravitational acceleration using simple and compound pendulums, analyzing the periodic characteristics of a torsional pendulum, exploring kinematics and dynamics (velocity/acceleration/Newton's second law), and verifying the law of conservation of energy, all within a modular system.

YGP-6258 # Energy Conservation Law Experiment

Description:

The YGP-6258 Energy Conservation Law Verification System is an integrated experimental platform combining classical validation with modern investigation methods, aimed at comprehensively revealing the universal principles of energy transformation and conservation.

YGP-6257 # Velocity and Acceleration Experiment

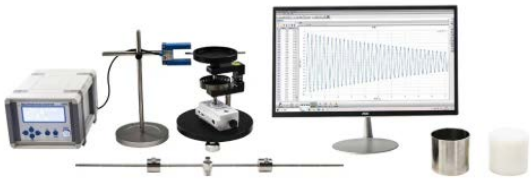
Description:

The YGP-6257 Velocity and Acceleration Measurement Experiment is an integrated laboratory platform that combines classical mechanics principles with modern sensor technology. It aims to replicate Galileo's inclined plane experiment, validate Newton's laws, and explore complex dynamics phenomena.

YGP-6217 # Coupled Pendulum Experiment

Description:

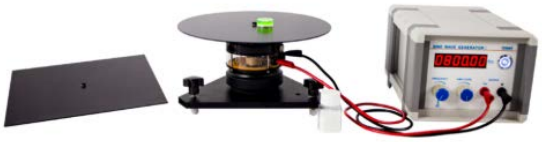
The coupled pendulum experimental apparatus based on rotational sensors is an integrated physical testing system that incorporates high-precision rotational measurement technology. It is primarily utilized to investigate the characteristics of coupled oscillations, such as energy transfer, beat phenomena, and resonance, through quantitative analysis of parameters including angular displacement and angular velocity. This enables the precise examination of the laws governing coupled vibrational behavior. The system allows for the quantitative measurement of in-phase and anti-phase oscillations, as well as simple harmonic motion and beat frequency.

	**YGP-6255 # Bohr Resonance Experiment** **Description:** The Bohr resonance experiment is an innovative apparatus specifically designed for teaching vibrational mechanics, focusing on the fundamental principles of damping and forced vibrations. Utilizing a variable-speed motor to drive an eccentric wheel that actuates a spring and pendulum platform, combined with high-precision wireless rotational sensors for real-time data acquisition, the system visually demonstrates the dynamic processes of free vibration, damping, forced vibration, and resonance.
	**YGP-6248 # Mechanical Sensor and Application Experiment** **Description:** This experimental setup employs resistive sensors to achieve the conversion from non-electrical quantities to electrical signals; the output signals are amplified and processed through a Wheatstone bridge circuit and amplifier for signal transmission, recording, and display. Accompanying digital analysis software captures and records the measurement data from the force sensor in real-time, providing real-time data analysis capabilities.
	**YGP-6251 # Rotational Inertia Experiment** **Description:** The moment of inertia is a measure of the magnitude of inertia when a rigid body rotates, and is a physical quantity that characterizes the characteristics of a rigid body. If the rigid body has a simple shape and a uniform mass distribution, its moment of inertia around a specific axis of rotation can be directly calculated. For rigid bodies with complex shapes and uneven mass distribution, the calculation will be extremely complicated, and experimental methods are usually used to determine it. This experimental method is to make the object torsional swing, and calculate the object's moment of inertia by measuring the swing period and other parameters. The knowledge points involved in the experiment include rigid body fixed axis rotation, moment of inertia, parallel axis theorem, etc. Through this experiment, students can develop their abilities in physical modeling, operation of basic instruments, and experimental data processing.
	**YGP-6250 # Elastic Modulus Measurement Experiment (Measurement of Young's modulus by tensile method)** **Description:** The elastic modulus is a physical quantity that characterizes the compressive or tensile properties of rigid materials within the elastic limit. The size of the elastic modulus indicates the rigidity of the material. The larger the elastic modulus, the more difficult it is to deform. The determination of the elastic modulus is of great significance to the study of the mechanical properties of various materials such as metals, semiconductors, polymers, ceramics, rubber, etc., and is an important mechanical parameter commonly used in engineering technology.

YGP-6240 # Solid and Liquid Density Measurement Experiment

Description:

Mass is one of the fundamental physical quantities in the International System of Units, exhibiting relativistic effects, and its units are quantized. Density refers to the mass of a substance contained within a unit volume and is used to describe one of the essential properties of matter. This experiment employs the static weighing method, utilizing a tension sensor to measure the voltage output when the sample is in air and when it is submerged in a liquid, allowing for the calculation of the sample's density. It enables the measurement of densities for both solids and liquids. Through this experiment, students can gain insights into the evolution of the definition of a kilogram, as well as develop their skills in using basic measuring instruments and applying mechanical knowledge comprehensively.



YGP-6239 # Chladni Plane Resonance Experiment

Description:

The Chladni figures are patterns that emerge on a uniform solid plate when driven by external vibrational sources, resulting in standing wave formations. This early-discovered physical phenomenon holds significant application value across various fields, including acoustic design, sound manipulation, micro-nano scale resonators, and even cancer cell detection. In this experimental setup, a wide metal plate is uniformly covered with sand, and upon activating the vibration source, the fine sand particles automatically arrange themselves into various beautiful patterns. As the frequency of the oscillator increases, these patterns continuously transform, creating the Chladni patterns, which visually represent the nodal lines. The Chladni plate resonance experiment can foster students' interest in exploring the scientific mysteries of sound and vibration.

YGP-6232 # Liquid Surface Tension Coefficient Experiment

Description:

The YGP-6232 liquid surface tension coefficient experimental device uses a force-sensitive sensor to measure the pulling force required when a metal ring with a known circumference is separated from the surface of the liquid to be measured, thereby obtaining the surface tension coefficient of the liquid. This method, also known as the pull-off method, is one of the commonly used methods. This experimental device includes a zero-setting function and a peak-hold display function, which can easily and concisely measure tiny pulling forces.

YGP-6220 # Sound Velocity Measurement Experiment

Description:

The YGP-6220 sound velocity measurement experimental device drives the ultrasonic transducer through the signal source, so that the ultrasonic wave passes through the air, liquid, solid and other media, and finally is received by the receiving end, thereby measuring the propagation speed of sound waves in these media. The sound velocity measurement experimental device can observe and study the phenomenon of sound wave propagation in different media, and measure the propagation speed of sound waves in different media. The instrument consists of two parts: a special sound velocity test frame and a special signal source, which can be used for basic physics experiments in universities.

YGP-6223# Damping and Forced Vibration Experiment

Description:

The back and forth motion of an object near a certain position (this position is called the equilibrium position) becomes mechanical vibration. In practical scenarios, vibrating systems are usually in gas or liquid, and they are subject to resistance from the surrounding medium. Due to the effect of resistance, the amplitude of vibration will gradually attenuate over time, so that the vibration cannot last long. To maintain continuous vibration, the outside world must exert continuous periodic external force on the oscillator so that the energy lost due to damping can be continuously replenished. The vibration of the oscillator under the action of periodic external force is called forced vibration, and the periodic external force is called forcing force, or driving force. The phenomenon when the amplitude of forced vibration reaches its maximum is called resonance.

YGP-6219 # String Vibration Experiment

Description:

The YGP-6219 string vibration experimental device establishes a standing wave mode in the stretched string by using a sine wave generator to drive the oscillator. A weight is suspended through a pulley at the other end of the string, and the characteristics of the string vibration are studied by varying the driving frequency in the oscillator, the length, linear density, and tension of the string. And there are two experimental options available: 1. YGP-6219A String Vibration Experiment; 2. YGP-6219B String Vibration and Sound Wave Experiment.

YGP-6222 # Pendulum Experiment

Description:

The compound pendulum is a dynamic motion system in which a rigid body makes small swings around a fixed horizontal axis under the action of gravity. The complex pendulum is also called the physical pendulum. When the swing angle is small, the swing is approximately a harmonic vibration. The acceleration due to gravity can be calculated from the oscillation period.

YGP-6229 # Variable G Pendulum Experiment

Description:

The pendulum used in this experiment is a physical pendulum. When the physical pendulum swings at a small angle, it approximates simple harmonic vibration. By constantly adjusting the angle between the pendulum and the vertical direction, the pendulum is allowed to oscillate at a small angle in the corresponding plane, which is equivalent to reducing the acceleration of gravity. During the experiment, the swing cycle time under different gravity acceleration conditions was obtained and compared with the theoretical value.

	**YGP-6227 # Large Amplitude Pendulum Experiment** **Description:** The pendulum used in this experiment is a physical pendulum to explore the relationship between amplitude and period. The software can display the angular displacement, angular velocity, and angular acceleration images of the large-amplitude pendulum in real time, which can be compared with the angular displacement, angular velocity, and angular acceleration sinusoidal motion images of the small-amplitude pendulum.

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ENERGY SCIENCE

YEL-3028A # Hydrogen Oxygen Fuel Cell Experiment

Description:

YEL-3028A Hydrogen-oxygen fuel cell experiment apparatus is a complete energy system model for teaching the principles of the hydrogen core and other components in the fuel cell. It demonstrates the chemical reaction of a small amount of hydrogen and oxygen. Users can also use the YEL-3028A to quantitatively test the solar and fuel cell performance.

YES-6401 # New Energy Experiment

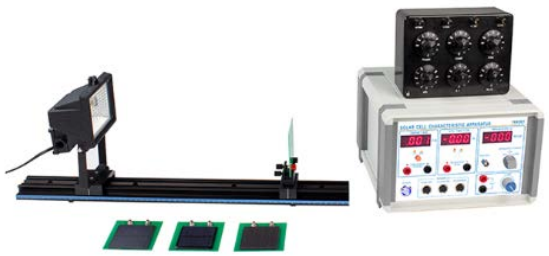
Description:

YES-6402 Solar Cell Characteristics Experiment adopts an iodine-tungsten lamp to imitate a solar light source. The light shines on a solar panel and generates current. YES-6402 experiment measures the irradiance of a light source at different distances, mapping the I-D curve, and then measures the output characteristics of different solar cells (Monocrystalline silicon, polysilicon, amorphous silicon) at different distances, and calculates short-circuit current (ISC), open circuit voltage (UOC), maximum output power (Pmax), and fill factor (FF). FF is an important parameter in appraising solar cell performance.

YGP-6201 # Energy Transmission Experiment

Description:

YGP-6201 Experiment of Energy Transmission Characteristics in Electromagnetic Field apparatus is for university teaching of general physics. It adopts the principle of magnetic coupling resonance (MCR), which brings about a higher transmission efficiency than inducive magnetic field coupling and is impervious to non-magnetic obstacles. YGP-6201 includes a pair of resonance coils. One, as a transmitter powered by a high-frequency AC power supply, produces magnetic energy. Another, as a receiver, receives and converts the magnetic field into electric energy, powering fans or LED. The distance and relative angles of coils, the load resistance, and the transmission media can be altered to study the factors influencing transmission efficiency.



YES-6402 # Solar Cell Characteristic Experiment

Description:

YES-6402 Solar Cell Characteristics Experiment adopts an iodine-tungsten lamp to imitate a solar light source. The light shines on a solar panel and generates current. YES-6402 experiment measures the irradiance of a light source at different distances, mapping the I-D curve, and then measures the output characteristics of different solar cells (Monocrystalline silicon, polysilicon, amorphous silicon) at different distances, and calculates short-circuit current (ISC), open circuit voltage (UOC), maximum output power (Pmax), and fill factor (FF). FF is an important parameter in appraising solar cell performance.

MATERIAL SCIENCE

YGP-6240 # Solid and Liquid Density Measurement Experiment

Description:

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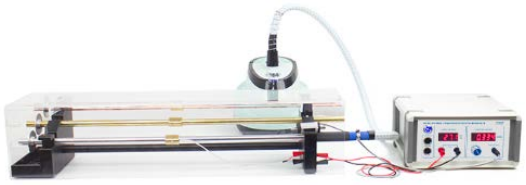

YGP-6203 Metal Thermal Expansion Coefficient Experiment

Description:

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YMP-6114 # Atomic force microscope (AFM)

Description:

Atomic force microscopes (AFM) use a highly sensitive microcantilever (microprobe) as a force sensor to detect the atomic force between the cantilever tip and the sample and thus delineate the microstructure of the sample’s surface. YMP-6114 AFM adopts a unique horizontal probe structure, overcoming the vertical micro-shift of the fine and coarse adjustments and enhancing the microscope’s stability.

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