



Instruments Designed for Teaching

US/Canada Price List in US Dollars

February 2012

(Prices subject to change without notice)

Diode Laser Spectroscopy, DLS1-A*

Complete Instrument \$ 16,315.00

Includes: Laser Head · 2 Diode Lasers (tested) · Complete Electronics (*Laser Controller, Cell Temperature Controller, Detector Electronics*) · 3 Photodiode Detectors with preamp · IR Viewing Card · CCD Camera · TV Monitor · Optics with all mounts and bases (*5 Mirrors, High Power Neutral Density Filter, 2 Neutral Density Filter sets with holder, 0.5° Optical Beam Splitter, 1° Optical Beam Splitter, 2-50/50 Beam Splitters, Flat Beam Splitter, 2 Rotating Linear Polarizers, 2 Rotating 1/4-Wave Plates*) · Absorption Cell Assembly (*Rb Cell, Helmholtz Coils, Cell Heater, Rotating Stand*) · 2 Safety Goggles · Special Tools · Black Anodized Aluminum Optical Bread Board 24" x 36" x 1/2" · Instructor/Student Manual

* **Magnetic field experiments require a separate current controlled power supply** - See recommended accessory

Enhanced Instrument \$17,690.00
(Includes Fabry-Perot Cavity)

Recommended Accessories:

Fabry-Perot Cavity FP1-A \$ 1,480.00
(within one semester of DLS1-A Purchase). \$ 1,375.00
Auxiliary Power Supply for Magnetic Experiments
Texio PR36-3A (36 Volts, 3 Amps) \$ 679.00

DLS Partial Systems Available:

Any System *without* Bread Board, deduct \$ 600.00

Basic Experiments, DLSB1-A \$ 14,995.00

This system **does not include** optics needed for simultaneous interferometry or several magnetic field experiments. Includes Bread Board ; Items Deleted:
1 Photodiode Detector (Center), 2 Mirrors, 2° Beam Splitter, 1 50/50 Beam Splitter, Flat Beam Splitter, 2 Rotating Linear Polarizers, 2 Rotating 1/4-Wave Plates

Diode Laser and Controller, DLHC1-A. \$ 10,860.00

Includes: Laser Head · 2 Diode Lasers (tested) · Complete Electronics (with cell temperature controller and detector electronics) · Manual · 2 pair Mandatory Safety Goggles

Optical Detector, DLOD1-A \$ 370.00

Includes: Complete Mounting Hardware · Photodiode with Low-Noise Preamp · Hood

Earth's Field NMR, EFNMR1-B*

Complete System including Gradient/Field Coil. \$ 7,530.00

Includes: Sample and Bucking Coil · Electronics for Sample and Bucking Coil (*Polarization Timer, High-Q Tuned Amplifier, Tuning Controls, Sound Amplification, Built-In Speaker*) · 2 Sample Holders · Gradient/ Field Coil System (*x,y,z Gradient Coils, Helmholtz Field Coils, Controller with Built-In Gradient Coil Power Supply*) · Segmented Sample Holder with filling syringe · Set of 3 Fluorine Samples (non-volatile, non-toxic) · Dip Needle Compass · All Connecting Cables · Instructor/Student Manual

Premium System \$ 8,530.00
(Includes 2 Texio Power Supplies)

Recommended Accessories/Additional Parts:

Spin Flip Coils 129.00
Texio PR36-3A Power Supply 679.00
Additional Set Fluorine Liquid Samples . . . 114.00
Non-volatile, Non-toxic Perfluoropolyether fluids (HT-110, HT-70, PFS-2)
Extra Sample Holders 3.50
Additional Segmented Sample Holder with Filling Syringe 89.00
Adjustable Height Non-Magnetic Stand (Used only with Basic Instrument). 207.00

EFNMR Partial Systems Available:

Basic Instrument, EFNMR1-A* \$ 4,860.00

Includes: Sample and Bucking Coil · Electronics for Sample and Bucking Coil (*Polarization Timer, High-Q Tuned Amplifier, Tuning Controls, Sound Amplification, Built-In Speaker*) · 2 Sample Holders · All Connecting Cables · Instructor/Student Manual

Basic with Texio Supply \$ 5,360.00

Earth's Field NMR Gradient/Field Coil System, EFGFC1-A* \$ 2,910.00

Includes: x,y,z Gradient Coils, Helmholtz Field Coils, Controller with Built-In Gradient Coil Power Supply · Dip Needle Compass · Segmented Sample Holder with filling syringe · All Connecting Cables · Instructor/Student Manual

G/F Coil with Texio Supply . . . \$3,410.00

* **These systems require separate current controlled power supplies such as the Texio PR36-3A**

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Fabry-Perot Cavity, FP1-A

Basic Instrument* **\$ 1,480.00**
 (within one semester of DLS1-A purchase). . \$ 1,375.00
Includes: Confocal 20 cm Cavity {*Free Spectral Range* - 375 MHz, *Finesse* ~ 100, *Mirror reflectivity* >99%, *Center Freq.*, 780 nm., *band width* (99% reflectivity) 80 nm }
 · Iris · 2 Support Posts with bases · Manual

***FP1-A requires a variable frequency laser**
 (Side bands observable with DLS1-A & RF signal generator)

Faraday Rotation, FR1-A

Basic Instrument * **\$ 1,128.00**

Includes: Laser Light Source · Solenoid · High Verdet Constant Glass Rod · Optical Detector · Linear Polarizer in Calibrated Rotating Mount · Mounting Base · Instructor/Student Manual

Enhanced Instrument * **\$1,478.00**

(Includes Power/Audio Amplifier PAA1-A)
 3 or more Enhanced units 1,440.00

Premium Instrument * **\$1,980.00**

(Includes PAA1-A & Texio Power Supply)

Recommended Accessories/Additional Parts:

Liquid Cell (Pair) 260.00
 Liquid Cell (ea) 142.00
 Additional Glass Rod 100.00
 Power/Audio Amplifier 380.00
 Texio PR36-3A (36 Volts, 3 Amps) 679.00
 Signal Processor/Lock-In. (SPLI-A) 2,590.00
 (SPLI-A needed for AC Measurements)

***NOTES – FR1-A requires power supplies**
 Laser: Voltage regulated supply, 4 volt, 40 mA, such as PAA1-A. PAA1-A can also provide the Audio Amp function for AC measurement.
 Solenoid: Current regulated supply capable of 3-5 A
 AC Measurement needs a Lock-In such as SPLI1-A

Hall Effect Probe, HE1-A

Complete Instrument **\$ 345.00**

(5% discount when purchased with MF1-A)
 3 or more units 323.00

Includes: Probe with axial and radial detectors · Non-magnetic base and support rod · HECK1-A Calibration Kit (*Helmholtz 4" coil form, support for coil form, 4 spools of wire for student use.*)

Magnetic Force, MF1-A

Complete Instrument * **\$ 455.00**

5 or more units 445.00
Includes: Helmholtz Coils · Tower with Cap · Magnetic Dipole in Gimbal · Calibrated Spring · 1 g weights (set of 5) · Instructor/Student Manual

Replacement Parts:

Tower with Cap 50.00
 Magnetic Dipole in Gimbal 65.00
 Brass Rod & Spring 15.00
 Spring 9.00
 1 g weights (set of 5) 2.00

***MF1-A requires a 36 volt, 3 A, current regulated power supply such the Texio PR36-A**

Magnetic Torque, MT2-B

Complete Instrument **\$ 2,995.00**

Including Magnetic Force Balance Kit

3 or more units 2,785.00

Includes: Magnet Coils · Air Bearing · Power Supply · Air Pump · Electronics for Strobe Light and Counter · One Magnetic Sphere · Magnetic Force Balance Kit · Rotating Magnetic Field · Gravitational Torque Arms and Sliding Weight · Instructor/Student Manual

Recommended Accessories:

Magnetic Force Tower Kit 106.00
Includes: Dipole in Gimbal, Spring, Weights, Tower with Cap

Replacement/Additional Parts:

Additional Magnetic Sphere. 65.00
 Replacement Air Pump 90.00
 Replacement Torque Arm 6.00
 Sliding weight for Torque Arm. 15.00

Without Rotating Magnetic Field, deduct \$ 130.00

Without Magnetic Force Balance, deduct \$ 140.00

Magnetic Torque Magnetic Balance Kit,

MTMFB1-A **\$ 185.00**

Includes: Balance Beam with Knife Edge · Support with Ceramic Bearings · Counter Weight · Small Weights · Reference Marker

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Modern Interferometry, MI1-A

Complete Instrument* \$ 15,325.00

Includes: Kit contains all elements to configure Michelson, Sagnac or Mach-Zehnder Interferometers and to perform a wide variety of experiments.
 Proprietary Apparatus: *Translational Stage, High Stability Mirror Mounts (3), Optics for Quadrature Detection, Large Area Photodiode Detectors (2), Solenoid, Pressure Transducer, Light Sources (4), Electronics for Fringe Counting – (optics with bases)*
 All Parts for Experiments on: *Index of Refraction of Gas, Electro-optic Effect, Magnetostriction, Piezo Electricity, Thermal Expansion, White Light Fringes, and Absolute Spatial Dimension.* · Optical Breadboard with Stabilizers · Student/Instructor Manual

* **Customer must supply power for white light source Magnetostriction experiments require a current regulated 36 volt, 3 A powers supply such the Texio PR36-A (See stand alone accessories.)**

Complete without Breadboard . . . \$ 14,600.00

Optical Detector, MIOD1-A \$ 395.00

Includes: Complete Mounting Hardware · Large Diameter Photodiode with Low-Noise Preamp

Flexure Mount w/ Mirror, MIMM1-A . . . \$ 438.00

Includes: High-Stability Flexure Mirror Mount · Base · Extra Mirror (Please specify Horizontal or Vertical Hinge)

*Prices for Individual Components available upon request.

Muon Physics, MP1-A

Complete Instrument* \$ 4,957.00

Includes: Detector Module containing Scintillator, Photomultiplier, High Voltage Power Supply, LED with Variable Pulser · Electronics · Software with Source Code Instructor/Student Manual

*Requires User Supplied Computer

Noise Fundamentals, NF1-A

Complete Instrument \$6,980.00

Includes: High-Level Electronics Controller, Low-Level Electronics Controller, Temperature Module w/ Probe, Break-out Box, Clear Dewar in Adjustable Height Support, Coax Cables, 45 Watt +/-15 Volt Power Supply, Hook Up Wire, Resistors, Transistors, Diodes, Photodiode in Holder, Light Bulbs and LEDs, Spare Operational Amplifiers, Instructor/Student Manual (**Requires User supplied Low End Digital Oscilloscope, a Good digital voltmeter and a Function Generator* such as the Protek B8003FD \$385.00**)

Optical Pumping, OP1-E

Complete Instrument* \$ 13,990.00

Includes: High Homogeneity Horizontal and Vertical Magnetic Field Coils on Base · Complete Optical System (*Rubidium Light Source, Absorption Cell, Interference Filter, Linear Polarizer, $\lambda/4$ Wave Plate, Optical Rail, Optical Detector/Preamplifier, Lenses*) · Cell Heater · Complete Electronic Controller (*RF Amplifier, Detector Amplifier, Horizontal Magnetic Field Sweep, Vertical Field, Temperature Controller, Internal Power Supply*) · Instructor/Student Manual

Recommended Accessories:

Non-Magnetic Table for Coils. 196.00
 RF Signal Generator, (100 kHz – 450 MHz) . . 249.00
 Auxiliary High Current Power Supply,
 Texio PR36-3A (36 Volts, 3 Amps) 679.00
 Circuit Diagrams 75.00

Rubidium Lamp \$ 2,957.00

Available Independently, See Individual Components
 REQUIRES Power Supply Capable of 28 V/0.5 A

***NOTES:**

- For basic operation, OP1-E requires an RF Signal Generator, 100 kHz – 20 MHz.**
- High Magnetic Field Experiments require an additional power supply \geq 36 V, 3 A (Texio)**

Power/Audio Amplifier, PAA1-A

Complete Instrument \$ 380.00

Includes: Electronics described below, Universal “Brick-on-a-rope” Power supply, Instruction Manual

Specifications

Freq. Range: DC-20 kHz
 Gain: Variable
 Max Outputs: 1.0 A (Peak), 10 Volt (Peak to Peak)
 Laser Power Supply: 4.1V@ 0.1A

Pulsed NMR Spectrometer, PS2-B

Complete Instrument \$ 17,475.00

Includes: Magnet with Sample Head, Gradient Coils and Temperature Stabilizer · Mainframe Electronics (*Power Supply, Receiver, Pulse Programmer, 21 MHz OSC/AMP/Mixer. Lock-In Amplifier*) · Gradient Coil/Temperature Controller, 7 BNC Cables · AC Power Cord · Sample Case with 50 Vials and Caps · Instructor/Student Manual

Recommended Accessories:

Circuit Diagrams 75.00
Replacement Parts: 50 Vials with Caps 65.00

PNMR Without Magnet – Inquire

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Quantum Analogs QA1--A

Complete Instrument* \$ 4,475.00
Includes: Atom-Molecule Models (4 Aluminum Hemispheres - one with built-in speaker and microphone, one with built-in microphone) · Band Gap Model (base, speaker, microphone, 2 sets of cylinders, 3 sets of iris) Complete Electronics (AC low noise Amplifier, Amplitude Detector, Frequency to voltage converter) · Instructor/Student Manual

Recommended Accessory:
 User Computer with Sound Card **Inquire**
 Function Generator :* **QA1-A requires a Sine wave generator capable of producing 1-50 kHz with a peak-to-peak voltage of 0.50 V such as the Protek B8003FD** 385.00

Signal Processor/Lock-In Amplifier, SPLIA1-A

Complete Instrument \$ 2,590.00
Includes: Preamplifier · Filter · Low-Pass Amplifier · Oscillator · Phase Shifter · Noise Generator · Attenuator · Amplitude and Lock-In Detector · Seven Short BNC Cables · Instructor/Student Manual

Recommended Accessory:
 Power/Audio Amplifier PAA1-A \$ 380.00
 Circuit Diagrams 75.00
 Faraday Rotation w/ Power Audio Amp ...\$1,478.00

Torsional Oscillator TO1-A

Complete Instrument* \$ 3,300.00
Includes: INQUIRE
 6 or more units 3,060.00
 * Driven oscillation experiments require a function or signal generator capable of 0.1 – 10 Hz. For high Q measurements, a frequency resolution of 0.01 Hz will be needed such as the Protek B8003FD

Two-Slit Interference, One Photon at a Time, TWS1-B

Complete Instrument* \$ 6,215.00
Includes: U Channel with Optics · Power Supply · Cables · Detachable Detector System including Photodiode and Photomultiplier · Instructor/Student Manual
 3 or more units 5,975.00

Recommended Accessories:
 Cricket, CR1-A 91.00

Replacement/Additional Parts:
 Replacement Slits 79.00

* TWS1-B requires an electronic Counter – Inquire

Two-Slit's Cricket, CR1-A

Complete Instrument \$ 91.00
Includes: Electronics (convert individual 400 ns TTL output pulses from a photomultiplier to 5 ms internal pulses) · Piezoelectric Buzzer · Amplifier

Stand Alone Accessories

Power Supply Texio PR36-3A \$ 679.00

Protek B8003FD Function Generator \$ 385.00

RF Signal Generator
100 kHz – 450 MHz \$ 249.00

Individual Components

Breadboard with stiffening ribs . . . \$795.00
(Required for MI1-A Kit)
 Black Anodized Aluminum 24" x 36" x 1/2"

Breadboard Only \$690.00
 Black Anodized Aluminum 24" x 36" x 1/2"

Rubidium Lamp \$ 2,957.00
Includes: Rb 9 mm diameter bulb, 75 – 90 MHz RF oscillator, 120 °C temperature regulated oven, Natural isotopic concentration with 3 Torr Xenon buffer
 REQUIRES Power Supply Capable of 28 V/0.5 A

Photodiode Photodetectors

Spectral Range: 400 – 1000 nm, Variable Gain
 Power Supply Required: ± 12 V

Includes: Complete Mounting Hardware · Large Diameter Photodiode with Low-Noise

Small Area (31 mm²)-For DLS & OP \$ 359.00

Large Area (100 mm²) For MI. . . . \$ 390.00

High-Stability Flexure Mirror Mount with Base and extra mirror For MI . \$ 425.00
Please Specify Horizontal or Vertical Hinge.

Also Available

Training at TeachSpin Factory for TeachSpin customers \$ 500.00
Includes: Full day of on-site training at a mutually convenient time

“Security” Labels (Set of 8) FREE