



Instruments Designed for Teaching

# International Price List in US Dollars February 2012

(Prices subject to change without notice)

## Diode Laser Spectroscopy, DLS1-A\*

**Complete Instrument . . . . . \$ 17,935.00**

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 Splitter, 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.**

**Enhanced Instrument . . . . . \$ 19,360.00**

(Includes Fabry-Perot Cavity)

### *Recommended Accessories:*

Fabry-Perot Cavity FP1-A . . . . . \$ 1,610.00  
(if purchased within one semester) . . . . . \$ 1,425.00  
Auxiliary Power Supply for Magnetic Experiments

### *DLS Partial Systems Available:*

**Any System without Bread Board, deduct \$ 615.00**

**Basic Experiments, DLSB1-A . . . . . \$ 16,390.00**

This system **does not include** optics needed for simultaneous interferometry or several magnetic field experiments. 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. \$ 11,930.00**

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 . . . . . \$ 395.00**

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

**Absorption Cell Assembly . . . . . \$ 2,900.00**

## Earth's Field NMR, EFNMR1-Bi

**Complete System including**

**Gradient/Field Coil\* . . . . . \$ 8,283.00**

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

\* **Separate current controlled power supplies required.**

### *Recommended Accessories/Additional Parts:*

Spin Flip Coils . . . . . 141.00  
Additional Set Fluorine Liquid Samples . . . 126.00  
non-volatile, non-toxic perfluoropolyether fluids ( HT-110, HT-70, PFS-2)  
Extra Sample Holders . . . . . 4.00  
Additional Segmented Sample Holder with filling syringe . . . . . 99.00  
Adjustable Height Non-Magnetic Stand (Used only with Basic Instrument). . . . . 230.00

### *EFNMR Partial Systems Available:*

**Basic Instrument, EFNMR1-Ai. . . . . \$ 5,346.00**

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

**Earth's Field NMR Gradient/Field Coil System, EFGFC1-Ai. . . . . \$ 3,200.00**

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

**Training at TeachSpin Factory . . . . \$ 500.00**

Includes: Full day of on-site training for TeachSpin customers on any combination of instruments. A mutually convenient time will be arranged.

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**Fabry-Perot Cavity, FP1-A**

**Basic Instrument\* . . . . . \$ 1,610.00**

(If purchased within one semester of DLS1-A).\$ 1,425.00

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 \* . . . . . \$ 1,241.00**

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 \* . . . . . \$1,610.00**

(Includes Power/Audio Amplifier PAA1-A)

3 or more Enhanced units . . . . . 1,584.00

**Replacement/Additional Parts and Accessories:**

Additional Glass Rod . . . . . 113.00

Liquid Cell (Pair) . . . . . 290.00

Liquid Cell . . . . . 157.00

Power/Audio Amplifier . . . . . 418.00

Signal Processor/Lock-In. (SPLI-A) . . . . . 2,850.00

(SPLI-A needed for AC Measurements)

**\*NOTES – FR1-A requires power supplies**

Solenoid: Current regulated supply capable of 3-5 A

Laser: Voltage regulated supply, 4 volt, 40 mA, such as

PAA1-A. PAA1-A can also provide the Audio

Amp function for AC measurement.

AC Measurement needs a Lock-In such as SPLI1-A

**Hall Effect Probe, HE1-A**

**Complete Instrument\* . . . . . \$ 380.00**

3 or more units . . . . . 360.00

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.)

NOTES:

1. HE1-A requires an external voltmeter to measure the amplified Hall Voltage.

2. Self-contained power supply requires a 110 V AC power line or adaptor

3. 5% discount when purchased with MF1-A

**Magnetic Force, MF1-A**

**Complete Instrument \* . . . . . \$ 500.00**

5 or more units . . . . . 490.00

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 . . . . . 55.00

Magnetic Dipole in Gimbal . . . . . 65.00

Brass Rod/Spring. . . . . 17.00

Spring . . . . . 10.00

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 (See stand alone accessories.)**

**Magnetic Torque, MT2-A**

**Complete Instrument . . . . . \$ 3,285.00**

**Including Magnetic Force Balance Kit**

3 or more units . . . . . 3,100.00

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 . . . . . 115.00

Includes: Dipole in Gimbal, Spring, Weights,

Tower with Cap

**Replacement/Additional Parts:**

Additional Magnetic Sphere. . . . . 70.00

Replacement Air Pump . . . . . 99.00

Replacement Torque Arm . . . . . 7.00

Sliding weight for Torque Arm . . . . . 17.00

**Without Rotating Magnetic Field, deduct \$ 135.00**

**Without Magnetic Force Balance, deduct \$ 150.00**

**Magnetic Torque Magnetic Balance Kit,**

**MTMFB1-A . . . . . \$ 205.00**

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\* . . . . . \$ 16,720.00**

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 . . . \$ 15,995.00**

**Optical Detector, MIOD1-A . . . . . \$ 420.00**

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

**Flexure Mount w/ Mirror, MIMM1-A . . . \$ 456.00**

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

**Muon Physics, MP1-A**

**Complete Instrument\* . . . . . \$ 5,518.00**

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 Computer5**

**Noise Fundamentals, NF1-A**

**Complete Instrument ... . . . . \$7,680.00**

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 . . . . . \$420.00**)

**Optical Pumping, OP1-E**

**Complete Instrument\* . . . . . \$ 15,425.00**

Includes: Rubidium Lamp · High Homogeneity Horizontal and Vertical Magnetic Field Coils on Base · Complete Optical System (*Absorption Cell, Interference Filter, Linear Polarizer, λ/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. . . . . 220.00  
 Circuit Diagrams . . . . . 88.00

**Rubidium Lamp . . . . . \$ 3,250.00**

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

**\*NOTES:**

- 1. For basic operation, OP1-E requires an RF Signal Generator, 100 kHz – 20 MHz.**
- 2. High Magnetic Field Experiments require an additional power supply ≥ 36 V, 3 A**

**Power/Audio Amplifier, PAA1-A**

**Complete Instrument . . . . . \$ 418.00**

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 . . . . . \$ 19,480.00**

Includes: Magnet with Sample Head · Complete Electronics (*Power Supply, Receiver, Pulse Programmer, 15 MHz OSC/AMP/Mixer*) · 7 BNC Cables · AC Power Cord · Sample Case with 50 Vials and Caps · Instructor/Student Manual

**Recommended Accessories:**

Circuit Diagrams . . . . . 88.00

**Replacement Parts:**

50 Vials with Caps . . . . . 72.00

**PNMR Without Magnet - Inquire**

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### Quantum Analogs QA1--A

**Complete Instrument\*** . . . . . \$ 4,930.00

*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:**

Protek B8003FD Function Generator . . . . . 420.00

\* 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.

### Signal Processor/Lock-In Amplifier, SPLIA1-A

**Complete Instrument** . . . . . \$ 2,850.00

*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 . . . . . \$ 418.00

Circuit Diagrams . . . . . 88.00

Faraday Rotation w/ PAA1-A . . . . . 1,610.00

### Torsional Oscillator TO1-A

**Complete Instrument\*** . . . . . \$ 3,630.00

*Includes:* INQUIRE

6 or more units . . . . . 3,366.00

**Recommended Accessory:**

Protek B8003FD Function Generator . . . . . 420.00

\* 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.

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

**Complete Instrument\*** . . . . . \$ 6,824.00

*Includes:* U Channel with Optics · Power Supply · Cables · Detachable Detector System including Photodiode and Photomultiplier · Instructor/Student Manual

3 or more units . . . . . 6,715.00

**Recommended Accessories:**

Cricket, CR1-A . . . . . 102.00

**Replacement/Additional Parts:**

Replacement Slits . . . . . 76.00

\* TWS1-B requires an electronic counter- Inquire

### Two-Slit's Cricket, CR1-A

**Complete Instrument** . . . . . \$ 102.00

*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** . . . . . \$ 740.00

- **NOTE:** This is a 120V power supply. If you have a different voltage requirement - *power supply must be converted by end user* – instructions provided

**Protek B8003FD Function Generator** – 420.00

**RF Signal Generator**

100 kHz – 450 MHz . . . . . \$ 278.00

### Individual Components

**Breadboard with stiffening ribs** . . . . \$ 875.00

(Required for MI1-A Kit)

Black Anodized Aluminum 24" x 36" x ½"

**Breadboard Only** . . . . . \$ 770.00

**Rubidium Lamp** . . . . . \$ 3,250.00

*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 mm<sup>2</sup>)** For DLS & OP \$ 395.00

**Large Area (100 mm<sup>2</sup>)** For MI. . . . \$ 435.00

### High-Stability Flexure Mount w/ Mirror

**with Base and extra mirror** . . . . . \$ 456.00

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 . . . a nice addition to a US visit!

**“Security” Labels** (Set of 8 ) . . . . .**FREE**