

US/Canada Price List in US Dollars January 2018

(Prices subject to change without notice)

Condensed Matter Physics, CMP1-A

TeachSpin's Condensed-Matter Physics initiative is a modular package, built of parts that can be purchased separately. Users, for example, might provide their own Vacuum (pumping) System. Users will likely start with the Variable Temperature Cryostat System and the Cryostat Support Electronics listed below. The (three) experiments also listed below are built to mount in the TeachSpin Cryostat, but they can be purchased in any order or combination.

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Variable Temperature Cryostat System Includes: Completely Wired 80-400K Dewar, Thermocouple Gauge with Two Sensors, Vacuum Valves, Sample Chambers, Heaters and Diode Thermometers, Interface Connector Box, D-sub cables (3), Custom Wooden Dewar Support, Manual	\$15,235.00
Cryostat Support Electronics. Includes: SRS "Mainframe" SIM 900, SRS Diode Temperature Monitor SIM 922, TeachSpin's PI Temperature Controller PITC1-A, (3) Mounted Diode Thermometers, TeachSpin's Dual Current Supply, 2 Volteq HY6003D Power Supply, 4-3Ft. Banana-Jack Cables, Manual	\$5,985.00
Transport/ Electrical Experiments. Includes: TeachSpin's Constant Current Source CCS1-A, Sample Platform 6-Wire Connector, Two Mounted Semiconductor Samples n-, p- type Si, Circuit Board Platform, 3 Evaporation Substrates, M. Recommended Accessory: Fluke 287 Multimeter.	lanual
Magnetic Susceptibility Experiments	rs,
TeachSpin's SPLIA1-A Or SRS Two Phase SR530	
Specific Heat Experiments	
Vacuum System Includes: Pfeiffer HiCube 80 Turbo Pump, Complete Valve, Lines, Cross, O-Rings, Clamps, Etc., Pirani/Cathode Vacuum Gauge, Custom Wood Stand, Instructions for Operation	
Custom Wooden Rack for Electronic Modules(not available in Canada)	\$325.00
TeachSpin's Dual Current Supply for Diode Thermometry DCDT1-A	\$795.00
Power Supply for Two SIM Modules, TeachSpin CMPPS1-A	\$295.00
Room Temperature Hall Effect Experiments. Includes: p-type & n-type Silicon Samples, and Copper Sample Recommended Accessory: Additional Silicon Sample. Evaporation Substrates	\$395.00 50 for 10
Additional Semiconductor Samples. Fluke 287 Multimeter.	*
Foundational Magnetic Susceptibility	



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Diode Laser Spectroscopy, DLS1-A*	Earth's Field NMR, EFNMR1-B*
Complete Instrument*\$ 17,550.00 Includes: Laser Head · 1 Extra 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, 1° Optical Beam Splitter, 2° Optical Beam Splitter, 2 50/50 Beam Splitters, Flat Beam Splitter, 2 Rotating Linear Polarizers, 2 Rotating ½-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 ½" · Instructor/Student Manual	Complete System including Gradient/Field Coil* \$ 7,995.00 Includes: Sample and Bucking Coil · Electronics for Sample and Bucking Coil (Polarization Timer, High-Q Tuned Amplifier, Tuning Controls, Built-In Speaker, Sound Amplification) · 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 * 2 Separate current controlled power supplies required. Sample Coil: 60V 3A-Volteq; Gradient/Field Coil: Inquire
* Magnetic field experiments require a separate current controlled power supply - See recommended accessory	Premium System \$ 8,795.00 (Includes 2 Volteq Power Supply & Hall Effect Probe)
Enhanced Instrument \$ 19,250.00 (Includes Fabry-Perot Cavity)	Recommended Accessories/Additional Parts: Spin Flip Coils
Recommended Accessories: Fabry-Perot Cavity FP1-A	Additional Set Fluorine Liquid Samples 180.00 Non-volatile, Non-toxic Perfluoropolyether fluids (HT-110, HT-70, PFS-2) Extra Sample Holders
Any System without Bread Board, deduct - \$ 565.00	EFNMR Partial Systems Available:
Basic Experiments, DLSB1-A \$ 16,275.00 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 ½-Wave Plates Note: This system includes Bread Board	Basic Instrument, EFNMR1-A*\$ 5,225.00 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 Volteq Supply\$ 5,385.00
Diode Laser and Controller, DLHC1-A . \$ 12,175.00 Includes: Breadboard · Laser Head · 2 Diode Lasers (tested) · Complete Electronics (with cell temperature controller and detector electronics) · Manual · 2 pair Mandatory Safety Goggles	Earth's Field NMR Gradient/Field Coil System, EFGFC1-A*
Optical Detector, DLOD1-A \$ 435.00 Includes: Complete Mounting Hardware · Photodiode with Low-Noise Preamp · Hood	Instructor/Student Manual With Volteq & Hall Effect Probe \$4,175.00



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Fabry-Perot Cavity, FP1-A* Basic Instrument*\$ 1,795.00 (within one semester of DLS1-A purchase)\$ 1,695.00 Includes: Confocal 20 cm Cavity { Finesse ~ 100, Mirror reflectivity > 99%, Center Freq., 780 nm. Bandwidth 80nm (99% reflectivity)} · Iris·2 Support Posts and bases · Manual *FP1-A requires a variable frequency laser (Side bands observable with DLS1-A & RF signal generator) Faradox Potation, FP1 A*	TeachSpin Physics Package \$ 4,495.00 Includes: Electronic Modules • External Experiments** • Instruction Manual * FM1-A Requires Low End Digital Oscilloscope, a DC Power Supply and a Function Generator Recommended Accessories: Rigol DG1022 function Generator
Faraday Rotation, FR1-A*	Hall Effect Probe, HE1-A
Basic Instrument	Complete Instrument
Premium Instrument	Complete Instrument * \$ 485.00
Recommended Accessories/Additional Parts: Liquid Cell (Pair)	5 or more units
Foundational Magnetic Susceptibilty	power supply such the Volteq HY6003D
Complete Instrument. \$ 1,635.00 Includes: Microbalance, Sample Manipulator, Material Samples (16), Sample Containers (24), Suspended Magnet, Current-Loop Calibrator, Graphite Levitation Kit, Manual Fourier Methods, FM1-A* Complete Instrument* \$ 9,125.00 Includes: Stanford Research Systems SR770 Spectrum Analyzer (w/USB Port) • Electronic Modules (Analog Summer, Analog Multiplier, Audio Mixer, Radio-Frequency Mixer; Analog High-Low-Bandpass Filter, Wide-Band Amp, Power Audio Amp, Speaker; Voltage-Controlled Oscillator for FM Generation, DC Voltage Supply; Lorenz Analog Chaos, LCR Resonance, 'Buried Treasure' for Signal-Under-Noise Intermodulation Distortion) • Accessories for Audio (3.5)	Magnetic Torque, MT2-B Complete Instrument

Magnetic Torque, MT2-B continued

Signal-Under-Noise, Intermodulation Distortion) • Accessories for Audio (3.5 mm/BNC) Interconnections • External Experiments (Fluxgate Magnetometer •

Acoustic Resonator • Coupled Oscillator) • Accessories (Microphone • AM Antenna • Universal Power Supply • Cables/Connectors) • Instruction Manual



*Requires User Supplied Computer

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Recommended Accessories: Magnetic Force Tower Kit 170.00	Noise Fundamentals, NF1-A*
Includes: Tower with Cap, Dipole in Gimbal, Spring on brass rod, Weight, Tower with Cap Hall Effect Probe (if purchased with MT) 390.00 Replacement/Additional Parts: Additional Magnetic Sphere	Complete Instrument *
Modern Interferometry, MI1-B*	Rigol DG1022 function Generator
Complete Instrument* \$ 16,950.00 Includes: Kit contains all elements to configure Michelson, Sagnac or Mach-Zehnder Interferometers and to perform a	Optical Pumping, OP1-E* Complete Instrument*\$ 14,875.00
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 · Instructor /Student Manual	Includes: Rubidium Lamp High Homogeneity Horizontal and Vertical Magnetic Field Coils on Base · Complete Optical System (Absorption Cell, Interference Filter, Linear Polarizer, ¼4 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: Rigol DG1022 function Generator 485.00
* Customer must supply power for white light source Magnetostriction experiments require a current regulated 36 volt, 3 A powers supply	Auxiliary High Current Power Supply, Volteq HY6003
Recommended Accessory:	Rubidium Lamp \$ 3,450.00
Volteq Power Supply	Available Independently, See Individual Components REQUIRES Power Supply Capable of 28 V/0.5 A
Optical Detector, MIOD1-A \$ 465.00 Includes: Complete Mounting Hardware · Large Diameter Photodiode with Low-Noise Preamp	*NOTES: 1. For basic operation, OP1-E requires an RF Signal Generator, 100 kHz – 20 MHz.
Flexure Mount w/ Mirror, MIMM1-A \$ 495.00 Includes: High-Stability Flexure Mirror Mount · Base · Extra Mirror (Please specify Horizontal or Vertical Hinge)	 2. High Magnetic Field Experiments require an additional power supply ≥ 36 V, 3 A (Volteq) Power/Audio Amplifier, PAA1-A
*Prices for Individual Components available upon request.	Complete Instrument \$ 435.00 Includes: Electronics described below, Universal "Brick-
Muon Physics, MP1-A* Complete Instrument*\$ 4,995.00 Includes: Detector Module containing Scintillator, Photomultiplier, High Voltage Power Supply, LED with Variable Pulser · Electronics · Software with Source Code Instructor/Student Manual	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



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Pulsed NMR Spectrometer, PS2-C Complete Instrument	SPAD- Single Photon Avalance Diode Complete Instrument
Quantum Analogs QA1A	NEW Torsional Oscillator Auxiliary
Complete Instrument* \$ 4,495.00 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 AE1-A* Complete Instrument* \$ 795.00 Includes: INQUIRE
Electronics (AC low noise Amplifier, Amplitude Detector, Frequency to voltage converter) · Instructor/Student Manual Recommended Accessory:	Two-Slit Interference, One Photon at a Time, TWS2-A
User Computer with Sound Card Inquire * 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 Rigol DG1022 Function Generator	Complete Instrument \$ 6,925.00 Includes: U Channel with Optics · Power Supply · Cables · Detachable Detector System including Photodiode and Photomultiplier · Pulse Counter/Interval Timer · Instructor/Student Manual Replacement/Additional Parts: Replacement Slits
Experiments Complete Instrument	Stand Alone Accessories
Complete Instrument	
Recommended Accessory: Additional Silicon Sample	Power Supply Volteq HY6003D \$ 255.00
Evaporation Substrates	Rigol DG1022 Function Generator \$ 485.00
\$150 for 10 Additional Semiconductor Samples Inquire Fluke 287 Multimeter\$495.00	RF Signal Generator 100 kHz – 450 MHz \$ 275.00
Signal Processor/Lock-In Amplifier, SPLIA1-A	Pulsed Counter/Interval Timer PCIT1-A \$ 785.00
Complete Instrument	Individual Components Breadboard Only \$ 945.00 Black Anodized Aluminum 24" x 36" x ½" Breadboard with stiffening ribs \$ 1,095.00 (Required for MI1-A Kit) Black Anodized Aluminum 24" x 36" x ½"



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Rubidium Lamp \$ 3,475.00

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 \$ 435.00 Large Area (100 mm²) For MI. \$ 465.00

High-Stability Flexure Mirror Mount

with Base and extra mirror For MI . . \$495.00 Please Specify Horizontal or Vertical Hinge.

GAMPT Scan/

UltraSonics Echoscope. \$ 4,708.00

Training at TeachSpin \$ 500.00

Includes: Full day of on-site training at a mutually convenient time

Due to our vendor(Gampt) being located in Germany and the fluctuating Euro value, prices are subject to change without notice

TeachSpin Pulsed UltraSound Physics Package, USPP1-A \$ 8,611.00

Includes: Ultrasonic Gel • Ultrasonic Echoscope GAMPT-Scan • 4 Ultrasonic Probes (1 -1 MHz, 2- 2 MHz, 1- 4 MHz) • Black Test Block • Cylinder Set (3 cylinders, support, holder block) • Shear Wave Set w/ Samples (acrylic/aluminum samples, reservoir, probe support) • Acoustic Impedance Samples • TeachSpin Proprietary Manual

For Additional Experiments Using USPP1-A:

Hydrophone Set	720.00
2 Rayliegh Wave Attachments	196.00
Rayleigh Waves Test Block	205.00
Set of Reflecting Plates	137.00
Lambda Plates	174.00
Lambda Wave (Surface Wave) Set	1,572.00
Ultrasonic Probe 1 MHz	647.00

Extensions for use with TeachSpin's Physics Package, USPP1-A

Ext A: Medical Extension, USA-M \$ 454.00

Includes: · Heart Model • Breast Dummy w/ Tumor

Accessories sold separately:

Eye Dummy	490.00
Ultrasonic Probe 1 MHz	646.00
Ultrasonic Probe 4 MHz	646.00
Ultrasonic Gel	16.00

Ext B: Engineering. & Material Science, USB-E \$ 813.00

Includes: Angle Beam Wedge 17° • Angle Beam Wedge 38° • Transceiver Delay Line (TOFD) • Test Block for Angle Beam Probe • Crack depth Test Block

Accessories sold separately:

Discontinuity Test Block......111.00 Acoustic Impedance Samples......222.00

Ext C: CT & Scanning Methods, USC-CT \$ 5,380.00

Includes: CT Scanner • CT Control Unit • CT Water Reservoir • Hydrophone • Hydrophone Support • CT Sample Holder

Kits Available for other Ultrasonic Phenomena

Debye-Sears Effect/Continuous Wave Ultrasonics, USDS-G5 \$ 5,264.00

Includes: CW Generator SC600 • Complete Set Debye-Sears Effect (Multifrequency Ultrasonic Probe (1-13MHz), Red Laser Module~ 652 nm, AOM Probe Adjustment, AOM Sample Reservoir • Green Laser Module, ~ 532 nm • Additional AOM Sample Reservoir • Cover for Reservoir • Projection Lens • Ultrasonic Absorber

Accessories sold separately:

Hydrophone Set	720.00
Adjustable Reflector	129.00
Photodiode Receiver	370.00
Ultrasonic Absorber	

<u>Ultrasonic Doppler Effect</u>,

USDE-G6 \$ 8,757.00

Includes: Ultrasonic Gel • Ultrasonic Pulse Doppler - FlowDop • Ultrasonic 1/2/4 MHz Probe • Centrifugal Pump - Flow Measuring Set • Doppler Dummy Fluid • Standpipes Accessories sold separately:

Doppler Prism 3/8"	122.00
Doppler Probe	
Double Reservoir	918.00
Arm Phantom	986.00
Blood Pressure Cuff	f227.00

Other individual parts – inquire