

CURRICULUM VITAE

Blas Cabrera

Biographical Data:

Born September 21, 1946, Paris, France, Derivative U. S. Citizenship 1963

Wife: JoAnn Cabrera, married 1972

Children: Nicolas Fernando and Joseph Frederick, born 1973; Blas Jacob, born 1979

Education:

B. S. in Physics with High Distinction, University of Virginia, 1968

Ph. D. in Physics, Stanford University, 1975

Thesis: The Use of Superconducting Shields for Generating Ultra Low Magnetic Field Regions and Several Related Experiments

Predoctoral Honors:

Sigma Pi Sigma, Physics Honor Society

Sigma Xi, associate membership

Woodrow Wilson Fellowship, 1968 (not accepted)

Churchill Fellowship for study at Cambridge, 1968 (unable to accept)

National Science Foundation Fellowship 1968-72

Academic Appointments:

Research Associate, Stanford University, 1975-79

Senior Research Associate, Stanford University, 1979-80

Acting Assistant Professor, Physics Department, Stanford University, 1980-81

Assistant Professor, Physics Department, Stanford University, 1981-84

Associate Professor (untenured), Physics Department, Stanford University, 1984-1986

Associate Professor (tenured), Physics Department, Stanford University, 1986-1991

Full Professor (tenured), Physics Department, Stanford University, 1991- present

Stanley Wojcicki Chair of Physics, 2011 - present

Postdoctoral Honors and Committees:

National Bureau of Standards Precision Measurement Grant 1978-81

Committee on Fundamental Constants of National Research Council 1983-7

NSF Advisory Committee on Cosmology 1988

Stanford University Fellow 1988-89, 1989-90

Stanford Dean's Award for Distinguished Teaching, 1990

Advisory Panel for Electronics and Electrical Engineering at NIST (formally NBS), 1991-3

Senate of Academic Council, Stanford University, 1991-92, 2007-08, 2009-10

Visiting Scholar Appointment at Balliol College, Oxford University, 1992-93

Fellow of American Physical Society (1996)

Chair of Stanford Physics Department 1996-99

School of Humanities & Sciences Appointments and Promotions Committee, 1998-2000

Chair of Varian 2 Building Committee 2003-2006

Deputy Director of Hansen Experimental Physics Laboratory (HEPL) 2003-2006

Director of Hansen Experimental Physics Laboratory (HEPL) 2006-2009

APS WKH Panofsky Prize in Experimental Particle Physics (with Bernard Sadoulet) 2013

Elected as foreign member of Real Academia de Ciencias in Spain (2013)

Professional Society Memberships:

Sigma Xi

American Physical Society (Division of Condensed Matter & Division of Astrophysics)

Computer Courseware:

Physics Simulations: vol. I, **Mechanics**, vol. II, **Electromagnetism**, and vol. III,

Modern Physics, (Kinko's Courseware Exchange, 1986) & (Intellimation, 1990).

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PUBLICATIONS

1. "A Novel Measurement of the Fluxoid Quantum Using a Clarke SLUG", (with B. S. Deaver and J. Williams), *Bull. Am. Phys. Soc.* **13**, 1691 (1968).
2. "Electric and Magnetic Shielding with Superconductors", (with W. O. Hamilton), **The Science and Technology of Superconductivity**, Vol. II, p. 587 (Plenum, 1973).
3. "Magnetic Shielding Using Superconducting Lead Foil", *Bull. Am. Phys. Soc.* **18**, 1609 (1973).
4. "A Single-Pass Magnetic Charge Detector Utilizing Superconducting Technology", *Bull. Am. Phys. Soc.* **20**, 87 (1975).
5. "Generating Ultra-Low Magnetic Field Regions with Superconducting Shields and Their Use with a Sensitive Magnetic Charge Detector", **Low Temperature Physics - LT14**, eds. M. Krusius and M. Vuorio, Vol. **4**, p. 270 (North Holland/American Elsevier, 1975).
6. "A High Accuracy Gyroscope Readout Test Facility for the Relativity Gyroscope Experiment", (with F. J. van Kann), *IEEE Trans. on Mag.*, **MAG-13**, 375 (1977).
7. "Ultra-low Magnetic Field Apparatus for a Cryogenic Gyroscope", (with F. J. van Kann), *Acta Astronautica*, **5**, 125 (1978).
8. "Application of SQUIDs to Measurements in Fundamental Physics", Conference on **Future Trends in Superconductive Electronics**, Charlottesville, Va., 1978, **AIP Conference Series**, No. 44, p. 73.
9. "Signal Detection in 1/f Noise of SQUID Magnetometers", (with J. T. Anderson), Conference on **Future Trends in Superconductive Electronics**, Charlottesville, Va., 1978, **AIP Conference Series**, No. 44, p. 161.
10. "Integration of SQUID 1/f Noise and its Application to a Superconducting Gyroscope", (with J. T. Anderson), *J. de Physique*, **C6**, 1210 (1978).
11. "Application of SQUIDs to Fundamental Physics", **En el Centenario de Blas Cabrera**, eds. S. Velayos, et al, p. 173 (Universidad Internacional de Canarias "Perez Galdos", 1979).
12. "Progress on the Relativity Gyroscope Experiment Since 1976", (with J. T. Anderson, C. W. F. Everitt, B. C. Leslie and J. A. Lipa), **Proceedings of Second Marcel Grossmann Meeting on General Relativity**, Trieste, Italy, ed. R. Ruffini, p. 939 (North Holland, 1982).
13. "Precision Area Measurements Determine Fundamental Physical Constants", (with G. J. Siddall), *Precision Engineering* **3**, 125 (1981).
14. "Determination of h/m_e in Rotating Superconducting Rings", (with S. (Benjamin) Felch

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and J. T. Anderson), *Physica* **107B**, 19 (1981).

15. "High Resolution Magnetic Measurements on Rotating Superconductors to Determine h/m_e ", (with S. (Benjamin) Felch and J. T. Anderson), in **Precision Measurement and Fundamental Constants II**, eds. B. N. Taylor and W. D. Phillips, Nat. Bur. Stand. (U. S.), Spec. Publ. 617, p. 359 (1984).
16. "Relativistic Mass Corrections for Rotating Superconductors", (with H. Gutfreund and W. A. Little), *Phys. Rev.* **B25**, 6644 (1982).
17. "Trapped Flux Readout for an Electrostatically Supported Superconducting Gyroscope", (with G. M. Keiser), **Proceedings of National Aerospace Meeting** (NASA Ames Research Center) March 24-25, 1982; p.75, published by The Institute of Navigation, 815 15th St., N.W., Suite 832, Washington, D.C. 20005.
18. "First Results from a Superconducting Detector for Moving Magnetic Monopoles", *Phys. Rev. Lett.* **48**, 1378 (1982).
19. "From Flux Quantization to Magnetic Monopoles", **Proceedings of the Third Workshop on Grand Unification**, eds. P. Frampton, S. L. Glashow and H. van Dam, p. 131 (Birkhäuser, 1982).
20. "Flux Quantization and Magnetic Monopoles", Proceedings of conference: **Algunos Aspectos Actuales de la Fisica: Curso Homenaje al Profesor Nicolas Cabrera**, eds. N. Garcia and S. Vieira, (Santander, Spain 1982 proceedings unpublished).
21. "Magnetic Monopoles: Evidence Since the Dirac Conjecture", (with W. P. Trower), **Foundations of Physics**, Vol. 13, p. 195 (1983). Also published in **Quantum, Space and Time - The Quest Continues: Studies and Essays in Honor of Louis de Broglie, Paul Dirac and Eugene Wigner**, eds. A. O. Barut, A. van der Merine and J. Vigiér, p. 449 (University Press, Cambridge 1984).
22. "Superconductive Monopole Detectors", **Proceedings of Tenth SLAC Summer Institute on Particle Physics**, SLAC Report No. 259, ed. Anne Moshen, p. 634 (1983).
23. "Status of Stanford Superconductive monopole Detectors", **Magnetic Monopoles**, eds. R.A. Carrigan and W. P. Trower, p. 175 (Plenum, 1983).
24. "Search for Cosmic Ray Monopole Flux", **Electroweak Effects at High Energies**, ed. H. Newman, p. 611 (Plenum, 1985).
25. "Sensing Area Distribution Functions for One- and Three- Loop Superconductive Magnetic Monopole Detectors", (with R. Gardner and R. King), *Phys. Rev.* **D31**, 2199 (1985).
26. "Upper Limit on Flux of Cosmic-Ray Monopoles Obtained with a Three-Loop Superconductive Detector", (with M. Taber, R. Gardner and J. Bourg), *Phys Rev. Lett.* **51**, 1933 (1983).

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27. "Near Zero Magnetic Fields with Superconducting Shields", **Near Zero: New Frontiers of Physics**, eds. J. D. Fairbank, B. S. Deaver, C. W. F. Everitt and P. F. Michelson, pp. 312-322, (Freeman, New York, 1988).
28. "Rotating Superconductors and Fundamental Physical Constants", (with S. B. Felch and J. T. Anderson), **Near Zero: New Frontiers of Physics**, eds. J. D. Fairbank, B. S. Deaver, C. W. F. Everitt and P. F. Michelson, pp. 323-332, (Freeman, New York, 1988).
29. "A Superconductive Detector to Search for Cosmic Ray Monopoles", (with M. Taber and S. B. Felch), **Near Zero: New Frontiers of Physics**, eds. J. D. Fairbank, B. S. Deaver, C. W. F. Everitt and P. F. Michelson, pp. 546-557, (Freeman, New York, 1988).
30. "The ^3He Nuclear Gyroscope and an Electric Dipole Moment Measurement", (with M. Taber), **Near Zero: New Frontiers of Physics**, eds. J. D. Fairbank, B. S. Deaver, C. W. F. Everitt and P. F. Michelson, pp. 558-570, (Freeman, New York, 1988).
31. "Superconductive Monopole Detectors", **McGraw-Hill 1985 Yearbook of Science and Technology** (5th Edition), ed. S.P. Parker, p. 247 (McGraw-Hill, 1985).
32. "Report on Stanford Superconductive Monopole Detectors", (with M. Taber, R. Gardner, M. Huber and J. Bourg), **Monopole '83**, ed J. Stone, p. 439 (Plenum, 1984).
33. "Measurement of h/m_e Using a Precision Niobium Ring", (with S. B. Felch, J. Tate and J. T. Anderson), **Low Temperature Physics - LT-17**, eds. U. Eckern, A. Schmid, W. Weber and H. Wühl, p. 923 (North-Holland, 1984).
34. "Novel Noise Thermometer for Measuring the Local Critical Temperature of a Superconducting Ring", (with J. Tate and S. B. Felch), **Low Temperature Physics - LT-17**, eds. U. Eckern, A. Schmid, W. Weber and H. Wühl, p. 1179 (North-Holland, 1984).
35. "Large Scale Superconductive Monopole Detector", (with R. Gardner, M. Taber and M. Huber), **Low Temperature Physics - LT-17**, eds. U. Eckern, A. Schmid, W. Weber and H. Wühl, p. 945 (North-Holland, 1984).
36. "Scanning Three-Axis SQUID Magnetometer for Measurement of Sub-Microgauss Magnetic Fields", (with J. M. Lockhart, E. Cornell and S. J. Pollock), **Low Temperature Physics - LT-17**, eds. U. Eckern, A. Schmid, W. Weber and H. Wühl, p. 925 (North-Holland, 1984).
37. "Cosmic-Ray Monopole Searches at Stanford Using Superconductive Detectors", (with M. Taber, R. Gardner and M. Huber), **Inner Space/Outer Space**, eds. E.W. Kolb, M.S. Turner, D. Lindley, K. Olive and D. Seckel, p. 426 (University of Chicago Press, 1986).
38. "A Precise Determination of h/m_e Using a Rotating Superconducting Ring", (with S.B. Felch, J. Tate and J.T. Anderson), *Phys. Rev.* **B31**, 7006 (1985).

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39. "Low Frequency Noise Reduction in SQUID Measurements Using a Laser-Driven Superconducting Switch: Part A: Direct Input Circuit Switching", (with J. T. Anderson, S. B. Felch and J. Tate), *Rev. Sci. Instr.* **60**, 202-208 (1989).
40. "Reduction of Excess Low Frequency Noise in RF-Biased SQUIDS", (with M. Taber), *Rev. Sci. Instrum.* **56**, 1835 (1985).
41. "Bolometric Detection of Neutrinos", B. Cabrera, L. M. Krauss and F. Wilczek, *Phys Rev. Lett.* **55**, 25-28 (1985).
42. "Low Frequency Noise Reduction in SQUID Measurements Using a Laser-Driven Superconducting Switch: Part B: Modulated Inductance Switching", (with J. T. Anderson and M. Taber), *Rev. Sci. Instr.* **60**, 209-213 (1989).
43. "Thermally Induced Transitions Between Flux Quantum States of a High-Inductance Superconducting Ring", (with J. Tate), unpublished report.
44. "Acoustic Detection of Single Particles", (with J. Martoff and B. Neuhauser), *Nucl. Instr. and Method.* **A275**, 97-111 (1989).
45. "Cryogenic Particle Detectors for Monopoles and Neutrinos", '86 **MASSIVE NEUTRINOS in Astrophysics and in Particle Physics**, eds. O. Fackler and J. Tran Thanh Van, proceedings of VI Moriond Workshop, Tignes, France, January 25- February 6, 1986, p. 423.
46. "Cooper Pair Mass", B. Cabrera and M. Peskin, *Phys. Rev.* **B39**, 6425-6430 (1989).
47. "New Data in the Precise Determination of h/m_e Using a Rotating Superconducting Ring", (with J. Tate), in **Proceedings of the 1986 Conference on Precision Electromagnetic Measurements**, ed. R. F. Dziuba, p. 8 (I. E. E. E., New York, 1986).
48. "New Cryogenic Detectors for Improved Neutrino and Double Beta Decay Experiments and Dark Matter Searches", (with D. Caldwell and B. Sadoulet), **Proceedings of Summer Study on the Physics of the Superconducting Supercollider** at Snowmass CO, June 23 - July 11, 1986, eds. R. Donaldson and J. Marx, p.704 (APS Division of Particles and Fields).
49. "Magnetic Monopoles at the Parker Limit: New Prospects for Large-Scale Detectors", (with M.L. Cherry, D.E. Groom and J. Musser), **Proceedings of Summer Study on the Physics of the Superconducting Supercollider** at Snowmass CO, June 23 - July 11, 1986, eds. R. Donaldson and J. Marx, p.665 (APS Division of Particles and Fields).
50. "Acoustic Detection of Single Particles for Neutrino Experiments and Dark Matter Searches", (with B. Neuhausser, C.J. Martoff and B.A. Young), *IEEE Trans. on Mag.* **Mag-23**, 469 (1987).

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51. "Report on the Stanford Octagonal Magnetic Monopole Detector", (with M.E. Huber, M.A. Taber and R.D. Gardner), *IEEE Trans. on Mag.* **Mag-23**, 1134 (1987).
52. "Cryogenic Detectors for Weakly Interacting Particles", (with B. Neuhauser, C.J. Martoff and B.A. Young), **13th Texas Symposium on RELATIVISTIC ASTROPHYSICS**, ed. M.P. Ulmer, p. 257 (World Scientific, 1987).
53. "PHYSICS SIMULATIONS: Teaching Aids for Elementary Physics Instruction", *Academic Computing*, p. 48 (Spring, 1987).
54. "Acoustic Detection of Low-Energy Radiation", (with C. J. Martoff and B. Neuhauser), Conference on **Intersections Between Particle and Nuclear Physics**, Lake Louise, Canada, 1986, **AIP Conference Series**, No. 150, p. 1119.
55. "Electric Field Enhanced Hopping Conductivity in Thin Film Carbon Thermometers", (with B. Neuhauser, C.J. Martoff, B.A. Young and M. Seiffert), *Jap. J. of Appl. Phys.* **26**, 1745 (1987).
56. "Phonon-Mediated Detection of Alpha Particles with Aluminum Transition Edge Sensors", (with B. Neuhauser, C.J. Martoff and B.A. Young), *Jap. J. of Appl. Phys.* **26**, 1671 (1987).
57. "Determination of h/m^* Using a Rotating Niobium Ring", (with J. Tate), *Jap. J. of Appl. Phys.* **26**, 1689 (1987).
58. "Operation of Eight-Loop Superconducting Magnetic Monopole Detector", (with M.E. Huber, M.A. Taber and R.D. Gardner), *Jap. J. of Appl. Phys.* **26**, 1687 (1987).
59. "Rotating Superconductors and the Cooper Pair Mass", B. Cabrera, *Jap. J. of Appl. Phys.* **26**, 1961 (1987).
60. "Magnetic Monopoles", **McGraw-Hill 1989 Yearbook of Science and Technology** (7th Edition), ed. S.P. Parker, pp. 199-202 (McGraw-Hill, 1988).
61. "Limits on Cosmic-Ray Magnetic Monopoles Set by Three-Loop Detector", R.D. Gardner, B. Cabrera, M.E. Huber, M.A. Taber and J. Bourg, *Phys. Rev.* **D44**, 622-635 (1991).
62. "Superconducting Transition Edge Sensors for Phonon-Mediated Particle Detection in Silicon Crystals", (with A. T. Lee, and B.A. Young), unpublished report..
63. "Interferometric Diameter Measurement of Fused Quartz Sphere at 6K", J. Tate, D. McIntyre and B. Cabrera, *Rev. Sci. Instr.* **60**, 985-992 (1989).
64. "Measurement of Cooper Pair Mass in Niobium", J. Tate, S.B. Felch, B. Cabrera and J.T. Anderson, *Phys. Rev. Lett.* **62**, 845-848 (1989).
65. "Precise Determination of Cooper Pair Mass in Niobium Using a Rotating Superconducting Ring", J. Tate, S.B. Felch, B. Cabrera and J.T. Anderson, *Phys. Rev.* **B42**, 7885-7893

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(1990).

66. "Phonon-Mediated Particle Detection", (with B. Neuhauser, C.J. Martoff, B.A. Young and A.T. Lee), *IEEE Trans. on Nucl. Sci.* **35**, 65 (1988).
67. "Status of Stanford Superconducting Detectors for Monopoles and Weakly Interacting Particles", **Superconductive Particle Detectors**, ed. A. Barone, p. 119 (World Scientific, Singapore, 1988).
68. "Early Experiences with *Physics Simulations* in the Classroom", Conference on **Computers in Physics Instruction**, eds. E. F. Redish and J. S. Risley, pp. 77-83 (Addison-Wesley, 1990).
69. "Phonon-Mediated Detection of X-Rays in Silicon Crystals Using Superconducting Transition Edge Sensors", (with B. A. Young, A. T. Lee, C.J. Martoff, J. P. McVittie and B. Neuhauser), *IEEE Trans. on Mag.* **25**, 1347-1330 (1989).
70. "Reduced Limit of the Flux of Cosmic Ray Magnetic Monopoles from Operation of an Eight Loop Superconducting Detector", (with M. E. Huber, M. A. Taber and R. D. Gardner), *IEEE Trans. on Mag.* **25**, 1208-1211 (1989).
71. "Low Noise Switching of a Superconducting Circuit by a Laser Induced Weak Link", (with C. E. Cunningham and D. Saroff), *IEEE Trans. on Mag.* **25**, 1022-1025 (1989).
72. "Demonstration of Absolute Flux Quantization in a Superconducting Circuit", (with C. E. Cunningham and D. Saroff), *Phys. Rev. Lett.* **62**, 2040-2043 (1989).
73. "Broadband Cryogenic Preamplifiers Incorporating GaAs MESFETs for Use with Low-Temperature Particle Detectors", (by A. T. Lee), *Rev. Sci Instr.* **60**, 3315-3322 (1989).
74. "Superconducting Detectors for Monopoles and Weakly Interacting Particles", **Proceedings of 1988 SLAC Summer Institute on Particle Physics**, ed. E. Brennen, 69-84 (1989).
75. "Reduced Limit for Flux of Cosmic Ray Monopoles from Eight Loop Superconducting Detector", M. E. Huber, B. Cabrera, M. A. Taber and R. D. Gardner, *Phys. Rev. Lett.* **64**, 835-838 (1990).
76. "Search for Cosmic Ray Magnetic Monopoles Using Eight Loop Superconducting Inductive Detector", M. E. Huber, B. Cabrera, M. A. Taber and R. D. Gardner, *Phys. Rev.* **D44**, 636-660 (1991).
77. "Phonon-Mediated Detection of Particles with Silicon Crystals", (with A. T. Lee, C.J. Martoff, J. P. McVittie, B. Neuhauser and B. A. Young), **Particle Astrophysics: Forefront Experimental Issues**, ed. E. B. Norman, pp.45-46 (World Scientific, 1989).
78. "Status of Dark Matter Searches", **Particle Astrophysics: Forefront Experimental Issues**, ed. E. B. Norman, pp.63-73 (World Scientific, 1989).

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79. "Dark Matter: Theory and Experiment", (with R. Bond, K. Griest and J. Primack), *Science*, in preparation.
80. "Design and Operation of Sealed ^3He Refrigerator", (with B. Neuhauser and A. T. Lee), *Rev. Sci. Instr.*, in preparation.
81. "Phonon-Mediated Detection of X-Rays in Silicon Crystals Using Superconducting Transition Edge Phonon Sensors", (with B. A. Young, A. T. Lee, C. J. Martoff, B. Neuhauser and J. P. McVittie), *Nucl. Instr. and Meth.* **A288**, 119-124 (1990).
82. "Superconducting Detectors for Laboratory Dark Matter Searches", **Quantum Fluids and Solids - 1989**, AIP Conference Proceedings No. 194, eds. G. G. Ihas and Y. Takano, pp. 342-351 (AIP, New York, 1989).
83. "Superconducting Transition Edge Phonon Sensors", B. Cabrera, in preparation.
84. "Phonon-Mediated Detection of Elementary Particles", **PHONONS 89**, Vol. 2, eds. S. Hunklinger, W. Ludwig and G. Weiss, pp. 1373-1382 (World Scientific, 1990).
85. "Phonon-Mediated Detection of Particles: Report of Round Table Discussion", (with B. Sadoulet, H. J. Maris and J. P. Wolfe), **PHONONS 89**, Vol. 2, eds. S. Hunklinger, W. Ludwig and G. Weiss, pp. 1383-1393 (World Scientific, 1990).
86. "Recent Progress in the Development of Silicon Crystal Acoustic Detectors", (with B. A. Young and A. T. Lee), **Low Temperature Detectors for Neutrinos and Dark Matter III**, eds. Brogiato, et al., pp. 183-191, (Editions Frontiere, France, 1990).
87. "Cryogenic Preamplifiers for Low-Temperature Particle Detectors", (with A. T. Lee and B. A. Young), **Low Temperature Detectors for Neutrinos and Dark Matter III**, eds. Brogiato, et al., pp. 313-320, (Editions Frontiere, France, 1990).
88. "Fundamental Physics Experiments Using SQUIDs", B. Cabrera, **Principles and Applications of Superconducting Quantum Interference Devices**, ed. A. Barone, pp. 345-416 (World Scientific, Hong Kong, 1992).
89. "Observation of Ballistic Phonons in Silicon Crystals from Alpha Particle Events", (with B. A. Young and A. T. Lee), *Phys. Rev. Lett.* **64**, 2795 (1990).
90. "Correlation of Flux States Generated by Optical Switching of a Superconducting Circuit", (with C. E. Cunningham and G. S. Park), *Physica* **B** 165 & 166, 113-4 (1990).
91. "Observation of Alpha-Induced Ballistic Phonon Time-of-Flight Using Multi-Channel Silicon Crystal Acoustic Detectors", (with B. A. Young and A. T. Lee), *Physica* **B** 165 & 166, 7-8 (1990).
92. "Vortices Trapped in a Superconducting Microbridge", (with G. S. Park and C. E.

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- Cunningham), *IEEE Trans. on Mag.* **27**, 3021-3024 (1991).
93. "Phonon-Mediated Particle Detection Utilizing Titanium Superconducting Transition Edge Sensors on Silicon Crystal Surfaces", (with A. T. Lee and B. A. Young), *IEEE Trans. on Mag.* **27**, 2753-2756 (1991).
 94. "Search for Monopoles in the Cosmic Rays with Inductive Detectors", see summary paper by F. P. Calaprice, **PANIC XII: Particles and Nuclei**, eds. J. L. Matthews, T. W. Donnelly, E. H. Farhi and L. S. Osborne, pp. 795c-808c (North-Holland, 1991).
 95. "Nicolas Cabrera: A Brief Biography", B. Cabrera, **Surface Physics**, Springer Proceedings in Physics No. 62, F. A. Ponce and M. Cordona, eds., pp. 3-8 (Springer-Verlag, Berlin, 1991).
 96. "Detection of Elementary Particles Using Superconducting Transition-Edge Phonon Sensors on Si Crystal Surfaces", B. Cabrera, **Surface Physics**, Springer Proceedings in Physics No. 62, F. A. Ponce and M. Cordona, eds., pp. 505-514 (Springer-Verlag, Berlin, 1991).
 97. "Detection of Elementary Particles Using Silicon Crystal Acoustic Detectors with Titanium Transition Edge Phonon Sensors", B. A. Young, B. Cabrera, A. T. Lee, and B. L. Dougherty, *Nucl. Instrum. and Meth.*, **A311**, 195 (1992).
 98. "Absolute Magnetic Penetration Depth of Thin-Film Niobium Measured by Fluxoid Quantization", C. E. Cunningham, G. S. Park, B. Cabrera and M. E. Huber, *Appl. Phys. Lett.* **62**, 2122-2124 (1993).
 99. "The Laser Switch in SQUID Measurements: Fundamental Experiments and Low-Frequency Noise Reduction", B. Cabrera, **Superconducting Devices and Their Applications**, Springer Proceedings in Physics No. 64, H. Koch and H. Lübbig, eds., pp. 326-336 (Springer-Verlag, Berlin, 1992).
 100. "Measurements of Ionization Produced in Silicon Crystals by Low-Energy Silicon Atoms", B. L. Dougherty, *Phys. Rev.* **A45**, 2104 (1992).
 101. "Vortex Pinning Force in a Superconducting Niobium Strip", G. S. Park, C. E. Cunningham, B. Cabrera, and M. E. Huber, *Phys. Rev. Lett.* **68**, 1920-1922 (1992).
 102. "Modulation Schemes Leading Toward Low-Frequency Noise Reduction in SQUID Magnetometers", C. E. Cunningham, G. S. Park, B. Cabrera, and M. E. Huber, proceedings of Third Superconductive Electronics Conference in Glasgow, Scotland on 27 July, 1991.
 103. "Detection of Elementary Particles Using Superconducting Transition-Edge Phonon Sensors on Si Crystal Surfaces", B. Cabrera, **Particles, Strings and Cosmology**, P. Nath and S. Reucroft, eds., pp. 122-130, (World Scientific, Singapore, 1992).
 104. "The Vortex Pinning Force of a Superconducting Niobium Line", G. S. Park, C. E.

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- Cunningham, B. Cabrera, and M. E. Huber, International Conference on Materials and Mechanisms of Superconductivity III ($M^2 S$), Kanazawa, Japan, July 25, 1991.
105. "Measurements of Ionization Produced in Silicon Crystals by Low-Energy Silicon Atoms", B. L. Dougherty, LTD-4 (IVth International Workshop on Low Temperature Detectors, Oxford, 1991), eds N. E. Booth and G. L. Salmon (Editions Frontières, France, 1992), pp. 465-470.
 106. "Phonon Mediated Particle Detection Utilizing Ti and Ti/Al Hybrid Detectors", A. T. Lee, B. Cabrera, B. A. Young, and N. I. Maluf, LTD-4 (IVth International Workshop on Low Temperature Detectors, Oxford, 1991), eds N. E. Booth and G. L. Salmon (Editions Frontières, France, 1992), pp. 217-227.
 107. "Tungsten Thin Films for Use in Cryogenic Particle Detectors", K. D. Irwin, B. Cabrera, B. Tigner, and S. Sethuraman, LTD-4 (IVth International Workshop on Low Temperature Detectors, Oxford, 1991), eds N. E. Booth and G. L. Salmon (Editions Frontières, France, 1992), pp. 209-215.
 108. "Phonon-Mediated Detectors for Dark Matter Searches and Neutrino Experiments", B. Cabrera, B. L. Dougherty, K. D. Irwin, A. T. Lee, J. G. Pronko, and B. A. Young, *Nucl. Phys. B*, Proceedings Supplement, 28A, 449-461 (1992).
 109. "Single Trapped Vortices Induced in a Superconducting Film by Laser Switching", George S. Park, Charles E. Cunningham, Blas Cabrera, and Martin E. Huber, *J. Appl. Phys.* **73**, 2419-2423 (1993).
 110. "A Low-Power-Dissipation Broadband Cryogenic Preamplifier Utilizing GaAs MESFETs in Parallel", A. T. Lee, *Rev. Sci. Instrum.* **64**, 2373-2378 (1993).
 111. "Electron Phonon Interactions in Si and Ge crystals and the Phonon Spectrum from Luke Effect Phonons", B. Cabrera (Oxford sabbatical manuscript).
 112. "Measurements of the Ballistic Phonon Component Resulting from Nuclear Recoils in Crystalline Silicon", A. T. Lee, B. Cabrera, B. L. Dougherty, M. J. Penn, and J. G. Pronko, *Phys.Rev. Lett.* **71**, 1395-1398 (1993).
 113. "Charge-Carrier Collection by Superconducting Transition-Edge Sensors Deposited on Silicon", B. L. Dougherty, B. Cabrera, A. T. Lee, M. J. Penn, B. A. Young, and J. G. Pronko, *Nucl. Instr. and Method.* **A333**, 464-468 (1993).
 114. "Charge-Carrier Collection in Superconducting Titanium Transition-Edge Sensors Deposited on High-Purity Silicon", B. L. Dougherty, B. Cabrera, A. T. Lee, M. J. Penn, J. G. Pronko, and B. A. Young, **Phonon Scattering in Condensed Matter VII**, Solid-State Sciences, Vol. 112, M. Meissner and R. O. Pohl, eds., pp. 484-485 (Springer-Verlag, Berlin, 1993).
 115. "Observation of ballistic phonons in crystalline silicon induced by gamma-ray and neutron

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- Loer, E. Lopez Asamar, R. Mahapatra, V. Mandic, C. Martinez, K.A. McCarthy, N. Mirabolfathi, R.A. Moffatt, D.C. Moore, P. Nadeau, R.H. Nelson, K. Page, R. Partridge, M. Pepin, A. Phipps, K. Prasad, M. Pyle, H. Qiu, W. Rau, P. Redl, A. Reissetter, Y. Ricci, T. Saab, B. Sadoulet, J. Sander, K. Schneck, R.W. Schnee, S. Scorza, B. Serfass, B. Shank, D. Speller, K.M. Sundqvist, A.N. Villano, B. Welliver, D.H. Wright, S. Yellin, J.J. Yen, J. Yoo, B.A. Young, and J. Zhang, accepted by *Physical Review Letters* (in press).
295. “Silicon detector results from the first five-tower run of CDMS II”, R. Agnese, Z. Ahmed, A. J. Anderson, S. Arrenberg, D. Balakishiyeva, R. Basu Thakur, D. A. Bauer, A. Borgland, D. Brandt, P. L. Brink, T. Bruch, R. Bunker, B. Cabrera, D. O. Caldwell, D. G. Cerdeno, H. Chagani, J. Cooley, B. Cornell, C. H. Crewdson, P. Cushman, M. Daal, F. Dejongh, P. C. F. Di tefano, E. do Couto e Silva, T. Doughty, L. Esteban, S. Fallows, E. Figueroa-Feliciano, J. Filippini, J. Fox, M. Fritts, G. L. Godfrey, S. R. Golwala, J. Hall, R. H. Harris, S. A. Hertel, T. Hofer, D. Holmgren, L. Hsu, M. E. Huber, A. Jastram, O. Kamaev, B. Kara, M. H. Kelsey, A. Kennedy, P. Kim, M. Kiveni, K. Koch, M. Kos, S. W. Leman, E. Lopez-Asamar, R. Mahapatra, V. Mandic, C. Martinez, K. A. McCarthy, N. Mirabolfathi, R. A. Moffatt, D. C. Moore, P. Nadeau, R. H. Nelson, K. Page, R. Partridge, M. Pepin, A. Phipps, K. Prasad, M. Pyle, H. Qiu, W. Rau, P. Redl, A. Reissetter, Y. Ricci, T. Saab, B. Sadoulet, J. Sander, K. Schneck, R. W. Schnee, S. Scorza, B. Serfass, B. Shank, D. Speller, K. M. Sundqvist, A. N. Villano, B. Welliver, D. H. Wright, S. Yellin, J. J. Yen, J. Yoo, B. A. Young, and J. Zhang, *Physical Review* **D88**, 031104(R) (2013).
296. “Quasiparticle Diffusion in Al Films Coupled to Tungsten Transition Edge Sensors”, J.J.Yen, B.A.Young, B.Cabrera, P. Redl, R. Moffatt, M. Cherry, A. Tomada, P. L. Brink, M. Pyle, and E. C. Tortorici, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
297. “Charge Transport Asymmetry in Cryogenic High Purity Germanium”, B.Shank, D.Q. Nagasawa, M. Cherry, B. A. Young, and B. Cabrera for the SuperCDMS Collaboration, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
298. “Spatial Imaging of Charge Transport in Germanium at Low Temperature”, R.A. Moffatt, B. Cabrera, F. Kadribasic, P. Redl, B. Shank, B.A. Young, D. Brandt, P. Brink, M. Cherry, and A. Tomada, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
299. “Accurate simulations of 206Pb recoils in SuperCDMS”, P. Redl for the SuperCDMS collaboration, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
300. “Detector fabrication yield for SuperCDMS Soudan”, P. L. Brink, A.J. Anderson, D. Balakishiyeva, D. A. Bauer, J. Beaty, D. Brandt, B. Cabrera, H. Chagani, M. Cherry, J. Cooley, E. do Couto e Silva, P. Cushman, M. Daal, T. Doughty, E. Figueroa-Feliciano, M. Fritts, G. Godfrey, S. R. Golwala, J. Hall, R. Harris, S. Herte, B. A. Hines, L. Hsu, M. E. Huber, O. Kamaev, B. Kara, S.A. Kenany, S.W. Leman, R. Mahapatra, V. Mandic, K. A.

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- McCarthy, N. Mirabolfathi, L. Novak, R. Partridge, M. Pyle, H. Qiu, R. Radpour, W. Rau, A. Reisetter, R. Resch, T. Saab, B. Sadoulet, J. Sander, R. Schmitt, R. W. Schnee, S. Scorza, D. N. Seitz, B. Serfass, B. Shank, A. Tomada, A. Villano, B. Welliver, S. Yellin, J.J. Yen, B. A. Young, and J. Zhang, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
301. “Geant4 Simulations of the SuperCDMS iZip Detector Charge Carrier Propagation and FET Readout”, Rob Agnese for SuperCDMS Collaboration, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
302. “Ionization Readout of CDMS Detectors with Low Noise, Low Power HEMTs, A. Phipps, Y. Jin, B. Sadoulet for the SuperCDMS Collaboration, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
303. “Phonon Event Analysis in SuperCDMS iZIP Detectors”, Adam Anderson for the SuperCDMS Collaboration, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
304. “Thermal Conductivity and Radioactivity of Useful Materials in Low Background Cryogenic Experiments”, Nicholas Kellaris, Miguel Daal, Erik Kramer, Matt Epland, Mark Pepin, Oleg Kamaev, Priscilla Cushman, Bernard Sadoulet, Nader Mirabolfathi, Sunil Golwala, and Marc Runyan, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
305. “Improving Energy Resolution in Massive Athermal Phonon Detectors”, Matt Pyle for the SuperCDMS Collaboration, **LTD145** Fifteenth International Workshop on Low Temperature Detectors, June 24-28, 2013, Pasadena, California, *Journal of Low Temperature Physics* (in press).
306. “CDMSlite: A Search for Low-Mass WIMPs using Voltage-Assisted Calorimetric Ionization Detection in the SuperCDMS Experiment”, R. Agnese, A.J. Anderson, M. Asai, D. Balakishiyeva, R. Basu Thakur, D.A. Bauer, J. Billard, A. Borgland, M.A. Bowles, D. Brandt, P.L. Brink, R. Bunker, B. Cabrera, D.O. Caldwell, D.G. Cerdano, H. Chagani, J. Cooley, B. Cornell, C.H. Crewdson, P. Cushman, M. Daal, P.C.F. Di Stefano, T. Doughty, L. Esteban, S. Fallows, E. Figueroa-Feliciano, G.L. Godfrey, S.R. Golwala, J. Hall, H.R. Harris, S.A. Hertel, T. Hofer, D. Holmgren, L. Hsu, M.E. Huber, A. Jastram, O. Kamaev, B. Kara, M.H. Kelsey, A. Kennedy, M. Kiveni, K. Koch, B. Loer, E. Lopez Asamar, R. Mahapatra, V. Mandic, C. Martinez, K.A. McCarthy, N. Mirabolfathi, R.A. Moffatt, D.C. Moore, P. Nadeau, R.H. Nelson, K. Page, R. Partridge, M. Pepin, A. Phipps, K. Prasad, M. Pyle, H. Qiu, W. Rau, P. Redl, A. Reisetter, Y. Ricci, T. Saab, B. Sadoulet, J. Sander, K. Schneck, R.W. Schnee, S. Scorza, B. Serfass, B. Shank, D. Speller, A.N. Villano, B. Welliver, D.H. Wright, S. Yellin, J.J. Yen, B.A. Young, and J. Zhang, submitted to *Physical*

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Blas Cabrera

Review Letters (September, 2013).

DISCLOSURES AND PATENTS

1. “Application of Electrothermal Feedback for High-Resolution Cryogenic Particle Detection Using a Transition-Edge Sensor”, Inventors: Kent D. Irwin and Blas Cabrera, Assignee: Stanford University, U. S. Patent No. 5,641,961 (1997).
2. “Enhanced Electrothermal Feedback for Increased Counting Rate with High Resolution Cryogenic Particle Detectors”, Inventors: Sae Woo Nam and Blas Cabrera, Assignee: Stanford University, U. S. Patent No. 6,211,519 (2001).

CURRICULUM VITAE

Blas Cabrera

INVITED COLLOQUIA

"Fundamental Experiments Using Ultra Low Magnetic Fields",
Physics Department, Georgia Institute of Technology, Jan., 1978.

"Precision Measurement of h/m_e Using Superconductivity: Physics and Metrology",
National Bureau of Standards, Gaithersburg, May, 1979.

"Ultra Low Magnetic Fields: Cryogenic Technology and Applications",
IBM Yorktown Heights, N. Y., May, 1979.

"Ultra Low Magnetic Fields: Cryogenic Technology and Applications",
Bell Laboratories, Murry Hill, N. J., May, 1979.

"What Can You Learn From Rotating Superconductors?",
Applied Physics Department, Stanford University, April 9, 1981

"Flux Quantization and Magnetic Monopoles",
Physics Department, University of Michigan, April 12, 1982

"Flux Quantization and Magnetic Monopoles",
Fermi National Laboratory, April 13, 1982

"Flux Quantization and Magnetic Monopoles",
National Bureau of Standards, Gaithersburg, April 14, 1982

"Flux Quantization and Magnetic Monopoles",
Physics Department, Virginia Polytechnique Institute, April 15, 1982

"Flux Quantization and Magnetic Monopoles",
Physics Department, University of Virginia, April 16, 1982

"From Flux Quantization to Magnetic Monopoles",
Stanford Linear Accelerator Center, April 26, 1982

"From Flux Quantization to Magnetic Monopoles",
Physics Department, Stanford University, May 5, 1982

"From Flux Quantization to Magnetic Monopoles",
Institute for Theoretical Physics, U.C. Santa Barbara, May 12, 1982

"From Flux Quantization to Magnetic Monopoles",
Physics Department, California Institute of Technology, May 28, 1982

"From Flux Quantization to Magnetic Monopoles",
Physics Department, U. C. Berkeley, June 9, 1982

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Blas Cabrera

"From Flux Quantization to Magnetic Monopoles",
Physics Department, U. C. Los Angeles, June 10, 1982

"From Flux Quantization to Magnetic Monopoles",
Physics Department, Brookhaven National Laboratory, June 15, 1982

"From Flux Quantization to Magnetic Monopoles",
Physics Department, University of Chicago, June 16, 1982

"Flux Quantization and Magnetic Monopoles",
Physics Department, Duke University, September 22, 1982

"Flux Quantization and Magnetic Monopoles",
Physics Department, Yale University, September 24, 1982

"Flux Quantization and Magnetic Monopoles",
Physics Department, Harvard University, December 9, 1982

"Flux Quantization and Magnetic Monopoles",
Physics Department, Massachusetts Institute of Technology,
December 10, 1982

"Flux Quantization and Magnetic Monopoles",
Physics Department, University of Washington, January 3, 1983

"Flux Quantization and Magnetic Monopoles",
Departamento de fisica, Univ. Autonoma de Madrid, January 31, 1983

"Flux Quantization and Magnetic Monopoles",
CERN Colloquium, Geneva, February 3, 1983

"Superconductive Monopole Detectors",
Physics Department, University of Arizona, May 4, 1983

"Superconductive Monopole Detectors",
IBM, Yorktown Heights Colloquium, May 18, 1983

"Superconductive Monopole Detectors",
Physics Department, San Francisco State, October 31, 1983

"Superconductive Monopole Detectors",
Argonne National Laboratory Colloquium, November 18, 1983

"Superconductive Monopole Detectors",
National Bureau of Standards, Gaithersburg, February 24, 1984

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Blas Cabrera

"Mediando la Masa del 'Cooper Pair'",
Departamento de fisica, Univ. Autonoma de Madrid, April 26, 1984

"La Superconductividad en la Fisica Fundamental",
La Fundacion Ramon Areces, Madrid, April 26, 1984

"Buscando el Monopolo Magnetico",
Departamento de fisica, Univ. Autonoma de Madrid, April 27, 1984

"Large Scale Superconductive Monopole Detectors",
SLAC Seminar, September 25, 1984

"Rotating Superconductor Experiment: High Precision Measurement of the Electron Mass",
SLAC Colloquium, February 11, 1985

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Boston University, March 14, 1985

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Fermilab Colloquium, March 15, 1985

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Calif. Institute of Technology, May 28, 1985

"Searches for Dark Matter Candidates: Monopoles and Neutrinos",
Departamento de fisica, Univ. Autonoma de Madrid, June 26, 1985.

"Superconductive Measurements on Elementary Particles:
Magnetic Monopoles, Neutrinos and Electrons",
Physics Department, Stanford, October 16, 1985

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Carlton University, Ottawa, Canada, November 5, 1985

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, National Research Council, Ottawa, Canada, November 6, 1985

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Boston University, November 7, 1985

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Columbia University, November 8, 1985

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Lockheed Colloquium, Palo Alto, December 5, 1985

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Blas Cabrera

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Los Alamos National Laboratory, January 8, 1986

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Swiss Nuclear Institute (SIN), January 31, 1986

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, University of Chicago, March 3, 1986

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, University of California at Los Angeles, March 20, 1986

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, University of Michigan, April 28, 1986

"Measurement of Cooper Pair Mass in Rotating Superconductors",
Physics Department, Brown University, May 1, 1986

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, University of California at Santa Barbara, May 6, 1986

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Autonomous University of Madrid, May 30, 1986

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, University of Virginia, September 26, 1986

"Low Temperature Detectors for Neutrino Experiments and Dark Matter Searches",
Physics Department, University of Chicago, November 13, 1986

"Cryogenic Particle Detectors for Neutrinos and Dark Matter Candidates",
Physics Department, University of California at Berkeley, March 10, 1987

"Rotating Superconductors and the Cooper Pair Mass",
Physics Department, University of Illinois, April 24, 1987

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Kobe University, Japan, August 27, 1987

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Vanderbilt University, December 4, 1987

"Cryogenic Particle Detectors for Monopoles and Neutrinos",
Physics Department, Milan University, Italy, June 27, 1988

"Acoustic Detection of Particles"

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Swiss Nuclear Institute (S. I. N.), Zurich, Switzerland, June 28, 1988

"Phonon-Mediated Detection of Particles"

Physics Department, Technical University, Munich, West Germany, June 30, 1988

"Cryogenic Particle Detectors for Monopoles and Neutrinos"

Nuclear Physics Department, University of Munich, West Germany, July 1, 1988

"Magnetism: Historical Perspective in Honor of Blas Cabrera"

Universidad Internacional de la Axarquía, Velez-Málaga, Spain, July 6, 1988

"Cryogenic Particle Detectors for Monopoles and Weakly Interacting Particles"

Physics Department, California Institute of Technology, October 13, 1988

"Cooper Pair Mass and Rotating Superconductors"

Condensed Matter Seminar, Applied Physics Department, April 20, 1989

"Cooper Pair Mass and Rotating Superconductors"

AT&T Bell Laboratories, Murray Hill, April 25, 1989

"Cryogenic Detectors for Monopoles and Weakly Interacting Particles"

Canadian Institute for Theoretical Astrophysics, University of Toronto, November 2, 1989

"Phonon-Mediated Detection of Elementary Particles"

Physics Department, Oregon State University, May 21, 1990

"What is the Dark Matter Around Our Galaxy?", 1990 Yunker Lecture in Physics

Physics Department, Oregon State University, May 21, 1990

"Phonon-Mediated Detection of Elementary Particles"

Physics Department, Monterey Post-Graduate Naval School, September 14, 1990

"Phonon-Mediated Detection of Elementary Particles"

Physics Division, Lawrence Berkeley Laboratory, September 20, 1990

"Phonon-Mediated Detection of Elementary Particles"

Electrical Engineering Department, Stanford University, October 17, 1990

"Phonon-Mediated Detection of Elementary Particles"

Harvey Mudd College, January 29, 1991

"Phonon-Mediated Detection of Elementary Particles"

UC Irvine, March 8, 1991

"Classroom Experiences with Physics Simulation Software for Introductory Physics Education"

San Francisco State University, April 2, 1991

CURRICULUM VITAE

Blas Cabrera

"Blas Cabrera Felipe and Nicolas Cabrera Sanchez: A Family Perspective"
Ateneo de Madrid, May 7, 1991

"Significance of Isotopically Enriched Si Crystals for Phonon-Mediated Particles Detectors"
Kyoto Institute of Technology, October 23, 1992

"Phonon-Mediated Elementary Particle Detectors"
Nippon Steel Advanced Research Laboratories, October 27, 1992

"Superconducting Laser Switch: Fundamental Physics Experiments and Applications"
Oxford University, Condensed Matter Seminar, November 12, 1992

"Phonon-Mediated Elementary Particle Detectors"
Oxford University, Physics Department Colloquium, November 13, 1992

"What is Dark Matter?"
Oxford University, Balliol Undergraduate Research Physics Society, November 24, 1992

"Cryogenic Particle Detectors for Dark Matter Searches"
Stuttgart University, Physics Department, December 1, 1992

"Cryogenic Particle Detectors for Dark Matter Searches"
Tubingen University, Physics Department, December 3, 1992

"Superconducting Laser Switch: Fundamental Physics Experiments and Applications"
Imperial College London, Condensed Matter Seminar, February 3, 1993

"Cooper Pair Mass"
Nordita, Copenhagen, Colloquium, February 17, 1993

"Cryogenic Particle Detectors for Dark Matter Searches"
Queen's College London, Physics Department Colloquium, March 1, 1993

"Status of Stanford Cryogenic Detector Program"
Max Planck Institute, Munich, Seminar, March 11, 1993

"Cryogenic Particle Detectors for Dark Matter Searches"
Rutherford Appelton Laboratory, Physics Department Colloquium, March 15, 1993

"Cryogenic Particle Detectors for Dark Matter Searches and Neutrino Experiments"
Physics Department Colloquium, Case Western Reserve University, October 14, 1993.

"Cryogenic Particle Detectors for Dark Matter Searches"
Physics Department Colloquium, University of Colorado, Boulder, October 29, 1993.

"Cryogenic Particle Detectors for Dark Matter Searches"
HEPL Colloquium, Stanford University, December 1, 1993.

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"Cryogenic Particle Detectors for Dark Matter Searches"
SLAC Colloquium, Stanford University, March 21, 1994.

"New Phonon-Mediated Particle Detectors with Negative Electrothermal Feedback"
High Energy Physics Seminar, Physics Department, University of Minnesota, May 8, 1996.

"Search for Dark Matter WIMPs with New Phonon-Mediated Particle Detectors"
Physics Department Colloquium, University of Minnesota, May 8, 1996.

"Search for Dark Matter WIMPs with New Phonon-Mediated Particle Detectors"
Institute for Nuclear and Particle Astrophysics (INPA) Seminar, Lawrence Berkeley National Laboratory (LBNL), August 30, 1996.

"Buscando la Materia Oscura del Universo" Departamento de Fisica, Facultad de Ciencias,
Universidad Autonoma de Madrid, Spain, May 30, 1997.

"Direct Searches for WIMPs", Physics Department, Stanford University, Stanford, California,
February 9, 1999.

"Direct Searches for WIMPs", Physics Department, University of California at Santa Cruz,
Santa Cruz, California, April 29, 1999.

"The Search for WIMPs", Physics and Astronomy Department, Sonoma State University,
Sonoma, California, March 27, 2000.

"The Search for WIMPs", Physics and Department, Grinnell College, Grinnell, Iowa, April 11,
2000.

"Recent Results from the CDMS (Cryogenic Dark Matter Search) Experiment", Saclay National
Laboratory, Saclay, France, June 9, 2000.

"Recent Results from the CDMS (Cryogenic Dark Matter Search) Experiment", Physics
Department, Universidad Autonoma de Madrid, June 13, 2000.

"Superconducting Transition-Edge Sensors for Dark Matter Search and for Optical Detectors",
Hansen Experimental Physics Laboratory, Stanford University, Stanford, California, May 2,
2001.

"What is the Dark Matter in and Around Our Galaxy?", Physics Department, University of Iowa,
Iowa City, Nebraska, November 19, 2001.

"The Search for Dark Matter WIMPs: The CDMS Experiment", Physics Department, University
of California at Los Angeles, February 27, 2002.

"ZIP Detectors for the CDMS Experiment", (invited seminar), May 8, 2002, Physics
Department, University of California at Santa Barbara.

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Blas Cabrera

“The Search for Dark Matter WIMPs: The CDMS Experiment”, (invited seminar), May 15, 2002, Society of Physics Students, Stanford University.

“Update of Stanford TES Research: Optimum Filtering for Non-Linear Signals, Optical, Solar X-Ray, and CDMS Status”, (invited seminar), April 9, 2003, NASA Goddard Space Flight Center.

“The Search for Dark Matter WIMPs: The CDMS-II Experiment”, (invited colloquium) November 12, 2003, Colloquium at DOE HEP Headquarters.

“The Search for Dark Matter in the Form of WIMPs: CDMS (Cryogenic Dark Matter Experiment)”, (invited seminar), May 19, 2004, Society of Physics Students, Physics Department, Stanford University, CA.

“The Search for Dark Matter in the Form of WIMPs: CDMS (Cryogenic Dark Matter Experiment)”, (invited colloquium), June 1, 2004, Physics Department, Stanford University, CA.

“The Search for Dark Matter in the Form of WIMPs: CDMS (Cryogenic Dark Matter Experiment)”, (invited seminar), July 13, 2004, Undergraduate Summer Research Program, Physics Department, Stanford University, CA.

“The Search for Dark Matter in the Form of WIMPs: CDMS (Cryogenic Dark Matter Experiment)”, (invited seminar), November 6, 2004, Quarknet meeting (high school science teachers), Physics Department, Stanford University, CA.

“The Search for Dark Matter in the form of WIMPs: CDMS (Cryogenic Dark Matter Search) - Extending the search for dark matter WIMPs beyond CDMS-II with SuperCDMS”, (invited seminar) SLAC Experimental Seminar, November 17, 2004, SLAC, Stanford, CA.

“The Search for Dark Matter in Our Universe: CDMS (Cryogenic Dark Matter Search)”, (invited colloquium), Lockheed Martin Palo Alto Colloquia, February 3, 2005, Palo Alto, CA.

“The Search for Dark Matter in Our Universe: CDMS (Cryogenic Dark Matter Search)”, (invited seminar), CIS Seminar (Center for Integrated Systems), February 8, 2005, Stanford, CA.

“The Search for Dark Matter in Our Universe: CDMS (Cryogenic Dark Matter Search)”, (invited lectures), Academic Lecture Series, April 17 & 19, 2006, Fermi National Accelerator Laboratory, Illinois.

“The Search for Dark Matter Particles in and Around Our Galaxy: CDMS - World’s Most Sensitive Experiment”, (invited colloquium), Director’s Colloquium, Los Alamos National Laboratory, Los Alamos, New Mexico, November 9, 2006.

“Search for Dark Matter: CDMS and SuperCDMS”, (invited colloquium), SLAC, Menlo Park, CA, April 21, 2008.

CURRICULUM VITAE

Blas Cabrera

“The Search for Dark Matter in Our Universe: CDMS and SuperCDMS Projects”, Summer Physics Research Seminar - Stanford University, June 25, 2009.

“The Search for Dark Matter in Our Universe: CDMS and SuperCDMS Projects”, (invited seminar), Society of Physics Students - Stanford University, April 16, 2010.

“What Makes up the Dark Matter in our Universe?”, (invited public lecture), 2011 Maggie & Nick DeWolf Physics Lectures, Wheeler Opera House, Aspen CO, February 9, 2011.

“What Makes up the Dark Matter in our Universe?”, (invited public lecture), 2011 Segré Physics Lectures, University of California at Berkeley, Berkeley CA, October 24, 2011.

“What Makes up the Dark Matter in our Universe?”, (invited public lecture), Instituto de Fisica Teorica, Universidad Autonoma de Madrid, Madrid, Spain, February 9, 2012.

“What Makes up the Dark Matter in our Universe?”, (invited seminar), Saclary-Orsay, Paris, France, February 13, 2012.

“What Makes up the Dark Matter in our Universe?”, (invited public lecture), Departamento de Fisica, Universidad de Zaragoza, Spain, February 21, 2012.

“What Makes up the Dark Matter in our Universe?”, (invited seminar), Instituto de Fisica Teorica, Universidad Autonoma de Madrid, Madrid, Spain, February 23, 2012.

CURRICULUM VITAE

Blas Cabrera

INVITED TALKS AND PAPERS

"Application of SQUIDs to Measurements in Fundamental Physics", (invited talk and paper), conference on Future Trends in Superconductive Electronics, Charlottesville, Va., 1978, **AIP Conference Series**, No. 44, p. 73.

"Application of SQUIDs to Measurements in Fundamental Physics", (invited talk and paper), conference in honor of my grandfather Blas Cabrera, Canary Islands, Spain, 1979, **En el Centenario de Blas Cabrera**, eds. S. Velayos, et al, p. 173 (Universidad Internacional de Canarias "Perez Galdos", 1979).

"Precision Area Measurements Determine Fundamental Physical Constants", (invited paper written with G. J. Siddall), *Precision Engineering* **3**, 125 (1981).

"From Flux Quantization to Magnetic Monopoles", (an invited talk and paper), **Proceedings of the Third Workshop on Grand Unification**, Chapel Hill, N. C., eds. P. Frampton, S. L. Glashow and H. van Dam, p. 131 (Birkhauser 1982).

"Flux Quantization and Magnetic Monopoles", (invited talk and paper), conference in honor of my father Nicolas Cabrera, Universidad Maria Vieja, Santander, Spain 1982, **Algunos Aspectos Actuales de la Fisica: Curso Homenaje al Professor Nicolas Cabrera**, N. Garcia and S. Vieira, eds., (proceedings unpublished).

"Magnetic Monopoles: Evidence Since the Dirac Conjecture", (invited paper written with W. P. Trower), in honor of P.A.M. Dirac's eightieth birthday, **Foundations of Physics**, Vol. 13, p. 195 (1983); Also published in **Quantum, Space and Time - The Quest Continues: Studies and Essays in Honor of Louis de Broglie, Paul Dirac and Eugene Wigner**, eds. A. O. Barut, A. van der Merine and J. Vigiér, p. 449 (Univ. Press, Cambridge 1984).

"Superconductive Monopole Detectors", (invited talk and paper), **Proceedings of Tenth SLAC Summer Institute on Particle Physics**, SLAC report no. 259, ed. A. Moshen, p. 634 (1983).

"Status of Stanford Superconductive Monopole Detectors", (invited talk and paper), Workshop on Magnetic Monopoles, Wingspread, Racine, Wisconsin, 1982; **Magnetic Monopoles**, eds. R.A. Carrigan and W.P. Trower, p. 175 (Plenum 1983).

"Superconductive Monopole Detectors", (invited talk), Exotic Particle Workshop, Institute for Theoretical Physics, U.C. Santa Barbara, January 1983.

"Search for Cosmic Ray Monopole Flux", (invited talk and paper), **Electroweak Effects at High Energies**, Erice, Italy, Feb. 1983, ed. H. Newman, p. 611 (Plenum, 1985).

"Precision Metrology to Determine Fundamental Physical Constants", (invited talk), conference on Precision Engineering, National Bureau of Standards, Gaithersburg, Md., May, 1983.

"Superconductive Monopole Detectors", (invited paper), **McGraw-Hill 1985 Yearbook of**

CURRICULUM VITAE

Blas Cabrera

Science and Technology (5th Edition), ed. S.P. Parker, p. 247 (McGraw-Hill, 1984).

"Superconductive Monopole Detectors", (invited talk), Workshop on SQUIDs and Motion Detectors, National Bureau of Standards, Boulder, Colorado, March, 1984.

"Reduction of Low Frequency Noise in SQUID Measurements", (invited talk), Workshop on SQUIDs and Motion Detectors, National Bureau of Standards, Boulder, Colorado, March, 1984.

"Review of Inductive Monopole Searches", (invited talk), XXII International Conference on High Energy Physics, at Leipzig, East Germany, July 19, 1984.

"Review of Inductive Monopole Searches", (invited presentation), Department of Energy, High Energy Physics Advisory Panel (HEPAP) Working Group Meeting on Non-Accelerator Physics, at Brookhaven National Laboratory, April 22-23, 1985.

"Bolometric Neutrino Detection", (invited presentation), at subcommittee of the joint NSF and DOE Nuclear Physics Advisory Panel (NPAP) on Solar Neutrino Physics, June 12-13, 1985.

"Bolometric Neutrino Detection", (invited presentation), JASON committee at MITRE in San Diego, July 16, 1985.

"Search for Dark Matter Candidates: Monopoles and Neutrinos", (invited lecture), 1985 SLAC Summer Science Program, August 1, 1985.

"What Can You Learn from Rotating Superconductors?", (invited talk), 1985 Berkeley Symposium on Surface Physics, December 11, 1985.

"Bolometric Detection of Neutrinos", (invited talk), Workshop on Cryogenic Detection of Neutrinos, UC Santa Barbara, January 17, 1986.

"Cryogenic Particle Detectors for Monopoles and Neutrinos", (invited talk), VI Moriond Workshop, Tignes, France, January 29, 1986.

"New Cryogenic Detectors for Improved Neutrino and Double Beta Decay Experiments and Dark Matter Searches", (invited talk) at Summer Study on the Physics of the Superconducting Supercollider at Snowmass CO, July 7, 1986.

"Cryogenic Particle Detectors for Monopoles and Neutrinos", (invited talk and paper) at Applied Superconductivity Conference, Baltimore, MD, September 29, 1986.

"Cryogenic Detectors for Magnetic Monopoles and for Weakly Interacting Particles", (invited talk) at school on Astro-Particle Physics, at the "Ettore Majorana" Centre for Scientific Culture in Erice, Italy, January 23, 1987.

"Cryogenic Particle Detectors for Monopoles and Neutrinos", (invited talk) at American Physical Society symposium on Experimental Astrophysics, San Francisco, January 27, 1987.

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"Cryogenic Particle Detectors for Monopoles and Neutrinos", (invited talk) at American Physical Society symposium on Detection of Weakly Interacting Massive Particles, Washington D.C., April 22, 1987.

"Particle Detectors Utilizing Quasiparticles in Superconductors and Ballistic Phonons in Crystals", (invited talk) at Workshop on Non-Accelerator Particle Physics, University of Rochester, June 1, 1987.

"Low Frequency SQUID Measurements in Fundamental Physics Experiments", (invited talk) at symposium on Practical SQUID Sensors for the 1990's, at Naval Coastal Systems Center, Panama City, FD, June 3, 1987.

"Rotating Superconductors and the Cooper Pair Mass", (invited talk) at the 18th International Conference on Low Temperature Physics, in Kyoto, Japan, August 21, 1987.

"Cryogenic Particle Detectors for Monopoles and Neutrinos", (invited talk) at the workshop on Superconducting Radiation Detectors, in Torino, Italy, October 28, 1987.

"Acoustic Detection of Single Particles", (invited talk) for APS Symposium on New Materials for Nuclear Radiation Detection, Baltimore APS Meeting, April 21, 1988.

"What Makes Up the Dark Matter Around Our Galaxy?", (invited talk) at Program for Gifted and Talented High School Students, School of Education, Stanford University, April 29, 1988

"Elementary Particle Detectors Using SQUIDS", (invited talk) at SQUID: State of the Art, Perspectives and Applications Conference, Rome, Italy, June 22, 1988.

"Laboratory Searches for Dark Matter", (invited talks and paper) at SLAC Summer Institute, Stanford University, July 25-26, 1988.

"Early Experiences with *Physics Simulations* Software in the Classroom", (invited talk) at Conference on Computers in Physics Instruction, North Carolina University, August 2, 1988.

"Low Frequency Noise Reduction in SQUID Measurements Using a Laser-Driven Superconducting Switch", (invited talk) at Conference on High Performance SQUID Systems, Tiburon, CA, August 26, 1988.

"Phonon-Mediated Detection of Particles with Silicon Crystals", (invited talk and paper) at Particle Astrophysics Conference, UC Berkeley, December 9, 1988.

"Status of Dark Matter Searches", (invited plenary talk and paper) at Particle Astrophysics Conference, UC Berkeley, December 10, 1988.

"Superconductive Monopole Detectors", (invited article) **McGraw-Hill 1989 Yearbook of Science and Technology** (5th Edition), ed. S.P. Parker, pp. 199-202 (McGraw-Hill, 1988).

"Superconducting Detectors for Laboratory Dark Matter Searches", (invited plenary talk and

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paper) Quantum Fluids and Solids Conference, University of Florida, Gainesville, April 24-28, 1989.

"Magnetic Monopoles", (invited article) **McGraw-Hill Encyclopedia of Science and Technology** (7th Ed.), in press.

"Laboratory Searches for Dark Matter", (invited symposium talk) APS Baltimore meeting, May 4, 1989.

"Phonon-Mediated Detection of Elementary Particles", (invited plenary talk and paper) **PHONONS 89**, Heidelberg, West Germany, August 24, 1989, Vol. 2, eds. S. Hunklinger, W. Ludwig and G. Weiss, pp. 1373-1382 (World Scientific, 1990).

"Phonon-Mediated Detection of Particles: Report of Round Table Discussion", (invited panel member and paper with B. Sadoulet, H. J. Maris and J. P. Wolfe)), **PHONONS 89**, Heidelberg, West Germany, August 22, 1989, Vol. 2, eds. S. Hunklinger, W. Ludwig and G. Weiss, pp. 1383-1393 (World Scientific, 1990).

"Superconducting Detectors for Monopoles and Weakly Interacting Particles", (invited plenary talk), 1989 Workshop on Superconductive Electronics: Devices, Circuits and Systems, St. Michaels, MD, October 1-5, 1989.

"The Use of SQUIDs for Fundamental Physics Experiments", (invited article) **Principles and Applications of Superconducting Quantum Interference Devices**, ed. A. Barone (World Scientific, Hong Kong), in press.

"Search for Monopoles in the Cosmic Rays with Inductive Detectors", (invited talk) Twelfth International Conference on Particles and Nuclei (PANIC XII), Cambridge, MA, June 29, 1990.

"Overview of Cryogenic Particle Detectors", (invited to present overview and to organize workshop) Workshop Session on Cryogenic Particle Detectors at the Nineteenth International Conference on Low Temperature Physics (LT-19), Brighton, England, August 17, 1990.

"Nicolas Cabrera: A Brief Biography", (invited plenary talk) Sixth Latinamerican Symposium on Surface Physics (SLAFS-6: Sexto Simposio Latinoamericano de Fisica de Superficies), September 2, 1990.

"Detection of Elementary Particles Using Superconducting Transition-Edge Phonon Sensors on Si Crystal Surfaces", (invited plenary talk) Sixth Latinamerican Symposium on Surface Physics (SLAFS-6: Sexto Simposio Latinoamericano de Fisica de Superficies), September 6, 1990.

"Detection of Elementary Particles Using Superconducting Transition-Edge Phonon Sensors on Si Crystals", (invited talk) at PASCOS 91 (The Second International Symposium on Particles, Strings, and Cosmology) held 25-29 March, 1991, at Northeastern University, Boston, March 28, 1991.

"The Laser Switch in SQUID Measurements: Fundamental Experiments and Low-Frequency

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Noise Reduction", (invited plenary talk) at the IV International Conference on Superconducting and Quantum Effect Devices and their Applications (IC SQUID '91), 18-21 June 1991, in Berlin, Germany, June 20, 1991.

Workshop on SQUIDs, (invited talk) in Glasgow, Scotland, June 28-9, 1991.

"Measurement of Pinning Force on a Single Vortex", (invited talk) at Seminar on Trapped Flux in Superconductors, at Stanford, 18 July, 1991.

"Phonon-Mediated Detection of Elementary Particles", (invited talk) at SLAC Summer Institute, August 15, 1991.

"Cryogenic Particle Detectors for Weakly Interacting Particles", (invited plenary talk) at conference on Theoretical and Phenomenological Aspects of Underground Physics, 9-13 September, 1991, Toledo, Spain, September 13, 1991

"Stanford Underground Facility", (invited talk) at the Workshop on Low Background Particle Detectors, 16-18 December, 1991, UC Berkeley, December 17, 1991.

"Studies of Athermal Phonon Pulses in Silicon Crystals from Alpha, X-Ray, and Neutron Bombardment Experiments", (invited plenary talk) at 7th International Conference on Phonon Scattering in Condensed Matter (PHONONS 92), 2-8 August, 1992 at Cornell University, Ithaca, NY, August 7, 1992.

"Phonon-Mediated Detectors for Dark Matter Searches and Reactor Neutrino Experiments", (invited plenary talk) at Neutrino Astrophysics Conference, 19-22 October, 1992, Takayama, Japan, October 21, 1992.

"Dark Matter Search at Shallow Stanford Underground Facility"
(invited talk) at Workshop on Low Background Experiments, Neuchatel, Switzerland, March 8-9, 1993

"Prompt Phonon Signals from Particle Interactions in Si Crystals"
(invited talk) at Fifth International Conference on Low Temperature Particle Detectors (LTD5) at UC Berkeley, July 29-August 2, 1993.

"Cryogenic Detectors for Neutrinos and Dark Matter"
(invited talk) at New Physics at New Facilities Workshop, Case Western Reserve University, October 15-17, 1993.

"Strategies for Direct Detection: Cryogenic Techniques"
(invited talk) at International Conference on Critique of the Sources of Dark Matter in the Universe, UCLA (Radisson Bel-Air Summit Hotel), February 16-18, 1994.

"WIMP Searches at Very Low Temperatures",
(invited talk) at Strategies for the Detection of Dark Matter Particles, LBL and UC Berkeley, February 21-24, 1994.

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"Cryogenic Detectors for Neutrinos and Dark Matter"

(invited talk) at SQUID Advances Workshop, HYPRES, Inc., New York, July 20, 1994.

"Dark Matter Searches for Monopoles and WIMPs"

(invited talk) at International Conference on the History of Original Ideas and Basic Discoveries in Particle Physics, Ettore Majorana Centre for Scientific Culture, Erice, Sicily, Italy, July 30 - August 4, 1994.

"SQUID-Readout Superconducting Transition-Edge Sensors for Elementary Particle Detection ", (invited symposium talk) at March Meeting of American Physical Society, March 21, 1995.

"Overview of Advanced Cryogenic Detectors"

(invited talk) at Center for Particle Astrophysics Symposium on Dark Matter, May 19, 1995.

"Advances in Stanford Phonon-Mediated Elementary Particle Detectors", (invited talk) at the Fourth International Conference on Phonon Physics and the Eighth International Conference on Phonon Scattering in Condensed Matter, Sapporo, Japan, July 24, 1995.

"Buscando la Materia Oscura en Forma de Monopolos Magneticos o Particulas Elementales Debiles", (invited talk) at Conmemoracion Luctuoso Aniversario de Don Blas Cabrera, Universidad Nacional Autonoma de Mexico, August 23, 1995.

"Bolemetric Sensors for Elementary Particle Detectors", (invited talk), Sixth International Workshop on Low Temperature Detectors, Bern, Switzerland, **LTD6**, August 31, 1995.

"Phonon-Mediated Detectors for WIMP Dark Matter Searches", (invited talk), Nuclear Science Symposium, San Francisco, CA, October 24, 1995.

"Experimental Signatures of WIMP Dark Matter", (invited talk), XXXIst Recontres de Moriond, Dark Matter in Cosmology, Quantum Measurements and Experimental Gravitation (Jan 20-27, 1996), Les Arcs, Savoie, France, January 22, 1996.

"Low Temperature Detectors for Dark Matter Searches", (invited talk), International Conference on Sources and Detection of Dark Matter in the Universe, UC Los Angeles, February 16, 1996.

"Fast Phonon and Ionization with a 100 gram Si Detector for the CDMS Experiment", (invited talk), International Workshop on the Identification of Dark Matter (**IDM96**), University of Sheffield, United Kingdom, September 9, 1996.

"Particle Detection with SQUIDS", (invited talk), SQUIDS Past, Present and Future: A Symposium in Honor of James E. Zimmerman, National Institute of Standards and Technology, Boulder, CO, November 15, 1997.

"Direct Searches for WIMPs", (invited talk), Dark Matter Conference, Heidelberg, Germany, July 24, 1998.

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“Status of CDMS (Cryogenic Dark Matter Search) Experiment”, (invited talk), Dark Matter Conference, Heidelberg, Germany, July 24, 1998.

“Particle Detectors Using Transition Edge Sensors”, (invited talk), **Phonons 98** Conference, Lancaster, United Kingdom, July 30, 1998.

“Transition Edge Sensors for Optical Photon Detectors”, (invited talk), Three Dimensional Imaging in Astrophysics Conference, Walnut Creek, March 30, 1999.

“Direct Detection of WIMPs”, (invited talk), Inner Space – Outer Space Conference, Fermi National Accelerator Laboratory, May 27, 1999.

“Superconducting Transition-Edge Sensors for Time-Energy Resolved Single-Photon Counters and for Dark Matter Searches”, (invited talk), **LT22** Conference, Helsinki, Finland, August 9, 1999.

“Design Considerations for TES and QET Sensors”, (invited talk), **LTD8**, Dalfsen, The Netherlands, August 18, 1999.

“Direct Detection of WIMPs and Superconducting TES Technology”, (invited talk), Cosmic Genesis Conference, Sonoma State University, California, October 28, 1999.

"ZIP Detectors for CDMS", Center for Particle Astrophysics Farwell Conference, University of California at Berkeley, May 24, 2000.

"Superconducting Transition-Edge Sensors for Time-Energy Resolved Single-Photon Counters and for Dark Matter Searches", (invited talk), Conference on Space Astrophysics Detectors And Detector Technologies, Space Telescope Science Institute, Baltimore, MD, June 27, 2000.

"Superconducting Detectors using Quasiparticle Trapping and Transition-Edge Sensors to Search for Dark Matter WIMPs", (invited talk), Applied Superconductivity Conference, Virginia Beach, Virginia, September 19, 2000.

"Status of the CDMS Search for Dark Matter WIMPs", (invited talk), Texas Relativistic Astrophysics Conference, Austin, Texas, December 11, 2000.

“Superconducting Transition-Edge Sensors for Time & Energy Resolved Single-Photon Counters and for Dark Matter Searches”, (invited talk), *Symposium on Superconducting Nano-Electronics Devices (SNED)*, Istituto Italiano per gli Studi Filosofici, May 30, 2001, Naples, Italy.

“Spectrophotometers for Near IR/Optical/UV”, (invited talk), Ninth International Workshop on Low Temperature Detectors (**LTD-9**), July 27, 2001, Madison, Wisconsin.

“Optimal Filtering for Non-Linear Signals”, (invited seminar), Bay Area Low Temperature Informal Conference (BALTIC), November 30, 2001, Stanford University.

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“The Search for Dark Matter WIMPs: The CDMS Experiment”, (invited talk), XXII International Conference on Particles in Collision, June 21, 2002, Stanford University.

“Superconducting Transition-Edge Sensors for Science & Technology”, (invited talk), American Physical Society April Meeting, April 5, 2003, Philadelphia, PA.

“Superconducting Transition-Edge Sensors and Superconducting Tunnel Junctions for Optical/UV Time-Energy Resolved “ (invited talk), April 10, 2003, NHST Conference, STScI, Baltimore, MD.

“En Busca de la Materia Oscura del Universo en la Forma de WIMPs: The CDMS Experiment”, (invited talk), July 7, 2003, Instituto Blas Cabrera - Arrecife, Lanzarote.

“Distributed superconducting transition-edge sensors for linearized position in a phonon-mediated x-ray imaging spectrometer”, (invited talk), July 10, 2003, Tenth International Conference on Low Temperature Detectors (**LTD10**), Genoa, Italy.

“Search for Dark Matter WIMPs”, (invited talk), October 11, 2003, Kavli CERCA Cosmology Conference, Cleveland, OH.

“CDMS Status and Roadmap”, April 2, 2004, (invited presentation) for Fermilab PAC (Program Advisory Committee), Batavia, IL.

“Ge and Si ZIP detectors to search for galactic dark matter”, (invited presentation) SNF/SNL Open House (Stanford Nanofabrication Facility), April 13, 2004, Stanford University, CA.

“CDMS Status and Roadmap”, April 15, 2004, (invited talk) for SAGENAP (Scientific Advisory Group for Experimental Nonaccelerator Physics), Washington, DC.

“The Search for Dark Matter in the form of WIMPs: CDMS (Cryogenic Dark Matter Search)”, (invited seminar), SLAC Summer Institute, August 2, 2004, Stanford, CA.

“Beyond CDMS Roadmap”, (invited seminar), KIPAC Tea, Stanford University, September 3, 2004, Stanford, CA.

“CDMS Future Directions”, (invited talk), IDM 2004 (International Dark Matter Conference), September 10, 2004, Edinburgh, Scotland.

“Cryosystems for CDMS Experiment”, (invited talk), Oxford Instruments Symposium at American Physical Society meeting in Los Angeles, California, March 20, 2005.

“Direct Detection of Dark Matter”, (invited talk), The Witherell Years - Symposium to Honor Michael Witherell, July 14, 2005, Fermi National Accelerator Laboratory, Illinois.

“Superconducting Transition Edge Sensors for Particle Astrophysics and Cosmology”, (invited talk), Ultra-Low Temperature Physics Conference Gainesville, FL, August 18, 2005.

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“Direct Detection Experimental Perspective”, (invited talk), Complementarity between Dark Matter Searches & Collider Experiments - Mini-Workshop after the UCLA Dark Matter Workshop (DM 2006), February 25, 2006, Marina del Rey, California.

“Direct Detection with Sub-Kelvin Experiments”, (invited talk), Particle Physics Project Prioritization Panel (**P5**) Meeting at Fermi National Accelerator Laboratory, April 19, 2006.

“Search for Dark Matter in our Galaxy”, (invited talks), Soudan Underground Laboratory Open House, May 6, 2006, Soudan, Minnesota.

“Direct Detection in the next five years: Experimental challenges and Phonon Mediated Detectors”, (invited talk), Complementarity between Dark Matter Searches & Collider Experiments Miniworkshop before SUSY06 at Irvine - June 10, 2006

“Superconducting Transition Edge Sensors for Optical Photons and Dark Matter Searches”, (invited talk), Applied Superconductivity Conference 2006, Seattle - August 29, 2006

“Latest Results on Direct Detection of Dark Matter WIMPs - CDMS & SuperCDMS”, (invited talk), 2nd Workshop On TeV Particle Astrophysics, Madison, Wisconsin - August 30, 2006.

“Superconducting Transition Edge Sensors for Dark Matter Searches”, (invited talk), American Physical Society March Meeting, Denver Colorado, March 8, 2007.

“Introduction to TES Physics”, (invited talk), The 12th International Conference on Low Temperature Detectors (LTD12), Conservatoire National des Arts et Métiers, July 22 - 27, 2007, Paris, France, July 23, 2007.

“CDMS and SuperCDMS”, (invited talk), The SLAC Summer Institute, Stanford, CA, August 2, 2007.

“CDMS and SuperCDMS”, (invited talk), SNOLAB Workshop, Sudbury, Canada, August 22, 2007.

“SuperCDMS at SNOLAB and at DUSEL”, (invited talk), DUSEL (Deep Underground Science and Engineering Laboratory) Workshop, Washington, D.C., November 3, 2007.

“SuperCDMS at SNOLAB(25 kg) & DUSEL”, (invited talk), Eighth UCLA Symposium on Dark Matter and Dark Energy, Marina del Mar, CA, February 22, 2008.

“Direct Detection of Dark Matter”, CIFAR08/LindeFest, KIPAC (Kavli Institute for Particle Astrophysics and Cosmology) Stanford University, March 7, 2008.

“Short and Long Range Plans for CDMS Dark Matter Search”, (invited seminar), KIPAC Tea, Stanford University and SLAC, May 30, 2008.

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“The Search for Dark Matter in the form of WIMPs and the CDMS Experiments “, (invited talk), XV INTERNATIONAL SUMMER SCHOOL “Nicolás Cabrera” Frontiers in Science and Technology 100 Years of Liquid Helium New Physics at the Edge of Absolute Zero, Madrid, Spain, September 15, 2008.

“Search for Dark Matter: CDMS and SuperCDMS”, (invited talk), SLUO (SLAC Laboratory User Organization) Workshop, Menlo Park, CA, September 17, 2009.

“The Future of CDMS: SuperCDMS Soudan, SuperCDMS SNOLAB, & GEODM DUSEL plus iZIP Huge Detector Advance”, (invited talk), Dark Matter Mini-Workshop at KITP (Kavli Institute for Theoretical Physics), UC Santa Barbara, Santa Barbara, CA, December 18, 2009.

“CDMS II results and prospects for future Ge detectors: SuperCDMS Soudan - 10 kg, SuperCDMS SNOLAB - 100 kg, and GEODM DUSEL - 1,500 kg”, (invited talk), PCTS (Princeton Center for Theoretical Science) Dark Matter Workshop, November 15-16, 2010, Princeton University, Princeton, NJ.

“Direct Detection of WIMP Dark Matter”, (invited talk), SLAC Summer Institute, July 29, 2011, SLAC National Accelerator Center, Stanford CA.

“Cryogenic Particle Detectors”, (invited talk), The Fourteenth International Workshop on Low Temperature Detectors **LTD14**, August 1, 2011, Heidelberg, Germany.

“CDMS Search for Dark Matter Results”, (invited talk), Dark Matter Silver Jubilee Conference, June 19, 2012, Pacific Nuclear National Laboratory, Pasco, WA.

“Low Energy Measurement Techniques”, (invited talk), Dark Matter Silver Jubilee Conference, June 20, 2012, Pacific Nuclear National Laboratory, Pasco, WA.

“Very Low Threshold Scattering - an Experimentalist's Perspective”, (invited talk), Workshop on Low Threshold Detectors for Detection of Coherent Neutrino Scattering, December 6, 2012, Lawrence Livermore National Laboratory, Livermore Valley Open Campus, Livermore, CA.

“Cryogenic Particle Detectors”, Instrumentation Frontier Community Meeting (CPAD), January 9, 2013, Argonne National Laboratory, Lemont, IL.

“Direct Detection of WIMP Dark Matter”, (invited talk joint with Cristiano Galbiati from Princeton University), Symposium on Particle Physics with Underground Experiments, March 18, 2013, Seoul, Korea.

“Cryogenic Particle Detectors in Search for Dark Matter”, (invited 2013 Panofsky Prize presentation), April 14, 2013, American Physical Society, April Meeting, Denver, CO.

CURRICULUM VITAE

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UNIVERSITY ASSIGNMENTS

Freshman Advising 1981-2, 9 students

Freshman Advising 1983-4, 7 students

Freshman Advising 1984-5, 6 students

Chairman of Ph. D. Oral Committee, 10 orals

Physics Department representative on FUTURES (Faculty University Team to Understand Research Environments and Space) committee to make faculty recommendations concerning the Near West Campus redevelopment program, 1985-7.

Academic Council Committee for Academic Computing and Information Systems (C-ACIS), 1987-88, 1988-89.

Dean of Research's Subcommittee on Indirect Costs Recovery, 1989-90.

Academic Council Committee on Undergraduate Admissions and Financial Aid (C-UAFA), 1990-91, 1991-92.

Senate of Academic Council 1991-92. 2007-08, 2010-11, 2011-2012

Steering Committee for Senate of Academic Council 2011-2012

H & S Advisory Committee on Study of Undergraduate Education 1993-4.

H & S Advisory Committee on the Curriculum 1994-5, 1995-6.

Stanford University Science & Engineering Quad Teaching Facility Committee 1994-5, 1995-6.

H & S Appointments and Promotions Advisory Committee 1998-2000

H & S Needs Assessment Committee 2001

Chair Physics/Astrophysics Building Committee 2003-06

Director of Hansen Experimental Physics Laboratory (HEPL) 2006-2009

CURRICULUM VITAE

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DIRECTING RESEARCH

Graduate Ph. D. Programs:

1. Susan Felch (graduated) Completed Ph. D. Thesis January, 1985:
"A Precise Determination of h/m_e
Using a Rotating Superconducting Ring"
2. Robert Gardner (graduated) Completed Ph. D. Thesis June, 1987:
"Inductive Search for Magnetic Monopoles with Three-Loop
Superconducting Detector and Design of Eight-Loop Detector"
3. Janet Tate (graduated) Completed Ph. D. Thesis October, 1987:
"A Precise Determination of the Mass of a Cooper Pair of
Electrons in Superconducting Niobium"
4. Martin Huber (graduated) Completed Ph. D. Thesis August, 1988:
"A 1.5 Square Meter Superconducting Detector for Cosmic Ray
Magnetic Monopoles"
5. Betty Young (graduated) Completed Ph. D. Thesis December, 1990:
"Phonon-Mediated Detection of Elementary Particles Using
Silicon Crystal Acoustic Detectors"
6. Charles Cunningham (graduated) Completed Ph. D. Thesis December, 1991:
"Applications of a Laser-Driven Superconducting Switch to
Fundamental Measurements and to Low-Frequency Noise
Reduction in SQUID Measurements"
7. Adrian Lee (graduated) Completed Ph. D. Thesis November, 1992:
"Cryogenic Phonon-Mediated Particle Detectors for Dark Matter
Searches and Neutrino Physics"
8. George Park (graduated) Completed Ph. D. Thesis May, 1994:
"Inductance Modulation and Vortex Pinning Studies Using Laser
Switched Superconductors"
9. Kent Irwin (graduated) Completed Ph. D. Thesis February, 1995:
"Phonon-Mediated Particle Detection Using Superconducting
Tungsten Transition-Edge Sensors"
10. Michael Penn (graduated) Completed Ph. D. Thesis September, 1995:
"Nuclear-Recoil / Electron-Recoil Discrimination in Cryogenic
Silicon Detectors for Use in Dark Matter Searches"

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11. Sae Woo Nam (graduated) Completed Ph. D. Thesis December, 1998:
“Development of Phonon-Mediated Cryogenic Particle Detectors with Electron and Nuclear Recoil Discrimination”
12. Roland Clarke (graduated) Passed Ph. D. Orals June 4, 1999:
“An Athermal Phonon-Mediated Dark Matter Detector with Surface Event Discrimination”
13. Aaron Miller (graduated) Passed Ph. D. Orals January 3, 2001
"Development of Superconducting Transition-Edge Sensors for Optical Spectrophotometers"
14. Enectali Figueroa-Feliciano (graduated) Passed Ph. D. Orals July 2, 2001
“Theory and Development of Position-Sensitive Quantum Calorimeters”
15. Tarek Saab (graduated) Passed Ph. D. Orals June 11, 2002
“Search for Weakly Interacting Massive Particles with the Cryogenic Dark Matter Search Experiment”
16. Clarence Chang (graduated) Passed Ph. D. Orals June 6, 2004
“The Cryogenic Dark Matter Search (CDMS-II) Experiment - First Results from the Soudan Mine”
17. Jen Burney (graduated) Passed Ph. D. Orals August 15, 2006
“Transition-Edge Sensor Imaging Arrays for Astrophysics Applications”
18. Steve Leman (graduated) Passed Ph. D. Orals August 16, 2006
“Development of Phonon-Mediated Transition-Edge-Sensor X-Ray Detectors for Use in Astronomy”
19. David Weld (graduated) Passed Ph. D. Orals November 27, 2006
“Design, Construction, and Operation of an Apparatus for Detecting Short-Length-Scale Deviations from Newtonian Gravity”
20. Thomas J. Bay (graduated) Passed Ph. D. Orals May 21, 2007
“Advances in the Optical Imaging Transition-Edge Sensor Array”
21. Walter Ogburn (graduated) Passed Ph. D. Orals December 7, 2007
“Dark matter search with the one- and two-tower CDMS runs”
22. Matt Pyle (graduated) Passed Ph. D. Orals October 16, 2009
“Interleaved ZIP Detector for Dark Matter Search experiments”

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- 23. Ben Shank Electrical Properties of Germanium Crystals for CDMS and modeling Superconducting Transition Edge Sensors
- 24. Robert Moffatt Charge Transport in Germanium Crystals at mK Temperatures
- 25. Jeff Yen Quasiparticle Diffusion in Superconducting Aluminum Films

Master's Program

- Barron Chugg
(Master's degree) 1993-1995: Research on Large Crystal Acoustic Particle Detectors and Photolithographic detector fabrication
- Andrea Davies
(Master's degree) 1997-1999: Research on SQUID noise measurements and Operation of FLIP Particle Detectors for Dark Matter Search

Postdoctoral Research Fellows

- Michael Taber 1982-1989: Research on Magnetic Monopoles
- John Borg 1983-1989: Developed DAQ for Monopole Detectors
- Barb Neuhausser 1989-1993: Development of Transition Edge Sensors for Dark Matter Searches and Neutrino Physics
- Brian Dougherty 1990-1995: Development of Dark Matter Search Experiment
- Paul Brink 1995-1999: Develop Dark Matter Search Detectors
- Laura Baudis 1995-2001: CDMS and MC Simulations
- Jodi Cooley 2004-2009: MC Simulations and Data Analysis for CDMS
- Marco Razeti 2009-2011: Cryogenic testing and detector development
- Peter Redl 2012-present: Data Analysis & detector development for CDMS

Senior Research Scientist

- Paul Brink 2003-2010: Leads Detector Fabrication for CDMS and SuperCDMS (now SLAC Staff Scientist)

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Undergraduate Research and Honors Programs:

- Eric Cornell Employment (1982-3): Calculations on magnetic fields inside superconducting cylinders
- Robert King Employment (1982-3): Sensing area calculations for monopole detectors. Co-author on "Sensing-area distribution functions for one- and three-loop superconductive magnetic-monopole detectors", Phys. Rev. **D9**, 2199 (1985).
Honors Thesis (completed May, 1985):
"Hot Prospects in Solar Cavity Receivers"
- Joseph Mosnier Employment (1983-4): Assembled cosmic ray shower detector around superconductive monopole detector
- Mike Seiffert Employment (1985-6): Measure superconducting T_c for thin films in bolometric neutrino detectors.
Honors Thesis (completed June 1986):
"Investigations of Ballistic Phonon Propagation"
- Andrea Backscheider Employment (1985-6): Constructed niobium-titanium coils for eight-loop magnetic monopole detector.
- Peter Swift Employment (1986-7): Aided in the assembly of eight-loop magnetic monopole detector.
- Tim Minvielle Employment (1989-90): Aided in phonon sensor development laboratory
- Chris Nolte Employment (1990): Aided in neutron scattering experiments
- Steve Brown Honors Thesis (completed June 1991):
"Global Warming or Nuclear Winter from Kuwait Oil Fires?"
- Sethuraman Srinivasan Employment (summer, 1991): Characterization measurements on tungsten thin-films.
- Chad Fertig Employment (autumn, 1994): Data acquisition system for dark matter experiment.
Honors Thesis (completed June 1995):
"Investigations of SQUID Noise Sources"
- J. B. Strauble Employment (Apr - Sept, 1995): Electronics for W/AI QETs
- Zanja Yudell Bing Summer Research Assistantship (Jun - Sept, 1995)
- Mung Chiang Summer Research Assistantship (Jun - Sept, 1997)

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Shipra Dingare	Summer Research Assistantship (Jun – Sept 1998) - SQUIDs
Chancy Schultz	Summer CIS Research Assistantship (Jun – Sept 1998)
Marc Gershow	Research Assistant (Jun, 2000 - Jun, 2001) - CDMS ZIP scan
Colin Bischoff	Summer Research Assistant (Jun – Sept 2000) - Optical Analysis
Bill Falsey	Summer Research Assistant (Jun – Sept 2000) - Au-black testing
Michele Cash	Research Assistant (Jan 2001 - Jun 2002) - Optical Photon Detectors
Steve Hamon	Research Assistant (Jan – Jun 2003) – X-ray Photon Detectors
Brian Gretensted	Research Assistant (Sept 2003 -) – Optical Photon Detectors
Josh Ruderman	Research Assistant (Sept – Dec 2003) – CDMS Capacitance Calculation
Tim Lipus	Research Assistant (June - Sept 2005 - CDMS quasiparticle calculations
Peter Brooks	Research Assistant (Sept 2006 - June 2007) - CDMS optimal filter analysis Honors Thesis completed June 2007
Sean Hart	Research Assistant (June 2007 - 2009) - New ZIP mask designs
Patrick Maher	Research Assistant (June 2007 - 2008) - electron-hole cloud sims
Stuart Coleman	Research Assistant (Sept 2007 - 2009) - radon plate-out studies
Chris Rorke	Research Assistant (June 2008 - 2010) - radon plate-out studies
Daniel Nagasawa	Research Assistant (June 2010 - 2012) - He3 probe DAQ
Fedja Kadribasic	Research Assistant (June 2011 - 2013) - piezo transducer studies

CURRICULUM VITAE

Blas Cabrera

COURSE TEACHING

Physics 15: Nature of the Universe

2000-01, 2004-05

Physics 16: Cosmic Horizons

2003-04

Physics 19: Introduction to Physics

1991-92

Physics 21: Mechanics and Heat

1994-95

Physics 25: Modern Physics

1994-95

Physics 41: Freshman Physics (Mechanics)

1995-96, 1996-97, 1998-99, 1999-2000

Physics 43: Freshman Physics (Waves and Electricity)

2000-2001

Physics 43N: Freshman Physics Seminar (Electricity and Magnetism)

2011-2012, 2012-2013, 2013-2014

Physics 50: Introductory Observational Astronomy

2010-2011, 2011-2012, 2012-2013

Physics 51: Freshman Physics (Mechanics)

1987-88, 1988-89, 1989-90, 1993-94

Physics 53: Freshman Physics (Mechanics)

2001-02, 2002-2003

Physics 61: Advanced Freshman Physics (Mechanics)

1980-81, 1981-82, 1982-83, 1983-84, 1984-85, 1985-86, 1990-91, 1991-92

Physics 62: Advanced Freshman Physics (Electricity and Magnetism)

1980-81, 1981-82, 1982-83, 1983-84, 1984-85, 1985-86, 1986-87

Physics 63: Advanced Freshman Physics (Modern Physics)

1980-81, 1981-82, 1986-87

Physics 64A & B: Advanced Freshman Physics (Laboratory)

1983-84 (Phys 100), 1984-85, 1988-89 (restructure course), 1989-90

CURRICULUM VITAE

Blas Cabrera

Physics 113: Computational Physics (developed course)

2001-02, 2004-05, 2006-07, 2007-08, 2008-09, 2009-10, 2010-11

Physics 120: Intermediate Electricity and Magnetism

2006-07 (first time), 2007-08, 2008-09, 2009-10 (reworked class material)

Physics 135: Computational Physics (developed course)

1990-91, 1992-93, 1995-96

Physics 172: Solid State Physics

1993-94

Computer Courseware Development for Physics 60's Series

Between 1984 and 1986, we developed a series of interactive computer programs on the Apple Macintosh computer to aid in the teaching of introductory physics. The work was supported by the Stanford Faculty Author Development Program (F. A. D.) through an Apple grant to Stanford.

Student participation included:

Brian Penpraise	undergraduate physics major
Jim Terman	undergraduate physics major (Phys 60, 1983-4)
Xa Xin Wei	graduate mathematics student
Donald Geddis	undergraduate engineering (Phys 60, 1984-5)
Diem	graduate mathematics student
Dan Schroder	graduate physics student.

From 1986 through 1989, fifteen application programs were published for commercial distribution by Kinko's Academic Courseware Exchange (**Physics Simulations**: vol. I, **Mechanics**, vol. II, **Electromagnetism**, and vol. III, **Modern Physics**, 1986). An accompanying tutorial and exercise manual was also developed.

In 1991, Jim Terman and I are revising the software and is being publish through Intellimation (**Physics Simulations**: vol. I, **Mechanics**, vol. II, **Electromagnetism**, and vol. III, **Modern Physics**, 1990).