Prof. Swapan Chattopadhyay
PUBLICATIONS AND COMMUNICATIONS
June 2009

This list is organized in nine parts:

A. Professional-journal and equivalent publications:

Refereed journals as well as papers at International and National Conferences. The latter are mostly invited (i.e reflect peer judgment), and hence are listed in this category.

B. Accelerator-Physics Reports:

Often the main form of communication of new ideas, formulations, calculations and results in accelerator physics is in the form of Laboratory Reports circulated among the thirty or so major accelerator centers and laboratories around the world. The typical circulation list for such reports may number at most a few hundred interested scientists. The Lawrence Berkeley Laboratory LBL series, CERN series, SSC series, SLAC series, Sincrotrone Trieste ST series, etc., belong in this category.

C. Workshop Proceedings:

Scholastic studies and works in very specialized topics are often reported in special international and national workshops organized by peers in the community and published in the proceedings of the workshop.

D. Review articles, technical and popular

E. Conceptual Design Reports:

The conceptual design of very large scientific facilities, especially accelerator complexes, prior to their detailed engineering design for construction, requires the collaborative effort of a team of scientists and engineers in various aspects of conceptualizing the system components, their dynamic behavior, and ultimate integration into the complex. A vast amount of theoretical, conceptual and engineering studies in formulating and calculating beam-dynamic and accelerator behavior is usually undertaken by the accelerator physicists. The final result is a Conceptional Design Report (CDR) for the project. Significant portions, sometimes a whole chapter, in these reports are contributed by very specific individuals.

F. Proposals, Reviews and Other Reports

G. Abstracts

H. Editorships, Books, etc.

I. Invited Talks

A. Professional-Journal and Equivalent Publications:

1. "Stochastic Cooling of Bunched Beams," Proceedings of the 1981 Particle Accelerator Conference, Washington, D.C., **IEEE Transactions on Nucl. Sci.,** 1981, Vol. NS-28, No. 3, p. 2462. With J. J. Bisognano.

2. "Study of the Beam Break-up Mode in Linear Induction Accelerators for Heavy Ions," ibid., p. 2465, with A. Faltens and L. Smith).

3. "On Stochastic Cooling of Bunches in the Colliding Beam Mode in High Energy $p\bar{p}$ Storage Rings," Proceedings of the 1983 Particle Accelerator Conference, Santa Fe, New Mexico**, IEEE Trans. on Nucl. Sci.,** 1983, Vol. NS-30, No. 4, p. 2334.

4. "Vlasov Theory of Signal Suppression for Bunched Beams Interacting with a Stochastic Cooling Feedback Loop," ibid., p. 2646.

5. "Theory of Bunched Beam Stochastic Cooling," ibid., p. 2649.

6. "A Formulation of Transversely Coupled Betatron Stochastic Cooling of Coasting Beams," ibid., p. 2652.

7. "Design Concepts of a Storage Ring for a High-power XUV Free Electron Laser," Proceedings of the 7th International Free Electron Laser Conference, Tahoe City, Ca., Sept. 9-13, 1985, with M. Cornacchia, J. J. Bisognano, A. Garren, K. Halbach, A. Jackson, K.-J. Kim, H. Lancaster, J. Peterson, C. Pellegrini, G. Vignola and M. Zisman.

8. "Storage Ring Design for a Short Wavelength FEL," **IEEE Trans. Nucl. Sci.,** 1985, Vol. NS-32, No. 5, p. 3377, with K -J. Kim, J. J. Bisognano, M Cornacchia, A. Garren, K. Halbach, A. Jackson, H. Lancaster, J. Peterson, C. Pellegrini, G. Vignola and M. Zisman.

9. "Optimization of the Parameters of a Storage Ring for a High-power XUV Free Electron Laser," Proceedings of the International Conference on Insertion Devices for Synchrotron Radiation Sources, 1985 (Stanford), SPIE Vol. 582. p. 131.

10. "Bunch Diffusion Under RF Noise—A Simulation Study," Proceedings of the 13th International Conference on High Energy Accelerators, 1985 Novosibirsk, USSR, with B. Leemann and E. Forest.

11. "Design Study of a 1-2 GeV Synchrotron Radiation Facility at Lawrence Berkeley Laboratory," ibid, with M. Cornacchia, A. Garren, A. Jackson, H. Nishimura, F. Selph and M. Zisman.

12. "Feasibility Study of a Storage Ring for a High-power XUV Free Electron Laser**," Particle Accelerators**, 1986, Vol. 18, p 223, with J J. Bisognano, M. Cornacchia, A. Garren, K. Halbach, A. Jackson, K.-J. Kim, H. Lancaster, J. Peterson, C. Pellegrini, G. Vignola and M. Zisman.
13. "Calculation of the Collective Effects and Beam Lifetimes for the LBL 1-2 GeV Synchrotron Radiation Source," 1987 IEEE Particle Accelerator Conference, Vol. 1 of 3, IEEE Catalog No. 87CH2387-9, 1987, p 425, with M. Zisman.

14. "The LBL Advanced Light Source", with A. Jackson, et. al., presented at the European Particle Accelerator Conference, EPAC, June 1988.

15. "Stability of High Brilliance Synchrotron Radiation Sources," LBL-28222, December 1989**, Nucl. Instr. and Methods in Phys. Res.** A 291 (1990) 455-460.

16. "Physics and Design Issues of Asymmetric Storage Ring Colliders as B-Factories," Proc. XIV Int. Conf. High Energy Acc., published in **Particle Accelerators**, Vol. 30, 1990.

17. "Workshop on the Beam Dynamics Issues of High-Luminosity Asymmetric Collider Rings", Research Note, **Particle World**, Vol. 1, No. 5 (1990), p. 133, with A. Chao, et. al.

18. "Electron Positron Factories", Proceedings of **IEEE Particle Accelerator Conference**, May 6-9, 1991, with M. Zisman, A. Garren, G. Lambertson, E. Bloom, W. Corbett, M Cornacchia, J. Dorfan, W. Barletta, D. Mohl, C. Pellegrini and D. Rice.

19. "Requirements and Design of a Highly Stable Infrared Free Electron Laser at LBL," LBL-29232, Proc. of the European Particle Accelerator Conference, Nice, France, June 12-16, 1990, with K.-J. Kim, et al.

20. “On Storage Rings for Short Wavelength FELS”, submitted to OE Laser ’90 Conference on Free Electron Lasers and Applications, **SPIE Proceedings**, Vol. 1227, January 14-19, 1990.

21. "Design Overview of a Highly Stable Infrared Free Electron Laser at LBL**," Nucl. Instr. and Methods in Phys. Res.** A 304 (1991) 233-237, with K.-J. Kim, et. al..

22. "Novel Techniques for Single-Pulse Spectrum and Pulse Width Measurements for an IR-FEL," LBL-32284, published in **Nuclear Instruments and Methods in Physics Research, A** 341 (1994), (Elsevier-North Holland), Proceedings of the Fourteenth International Free Electron Laser Conference (FEL '92), Kobe, Japan, August 23-28, 1992, with W. Leemans, J. Edighoffer, K.-J. Kim and A. Schwettman.

23. "Bench-Testing of IRFEL Hole-Coupled Resonator Designs Using a CW-He Ne Laser: Mode Profile and Outcoupling Efficiency," LBL-32285, published in **Nuclear Instruments and Methods in Physics Research A** 341 (1994), (Elsevier-North Holland) as the Proceedings of the Fourteenth International Free Electron Laser Conference (FEL '92), Kobe, Japan, August 23-28, 1992, with W. Leemans, J. Edighoffer, M. Xie and K.-J. Kim.

24. "An Infrared Free Electron Laser System for the Proposed Chemical Dynamics Research Laboratory at LBL Based on a 500 MHz Superconducting Linac," LBL-32287, published in **Nuclear Instruments and Methods in Physics Research A** 341 (1999) 280-284, (Elsevier-North Holland) as the Proceedings of the Fourteenth International Free Electron Laser Conference FEL '92, Kobe, Japan, August 23-28, 1992, with K.-J. Kim, R. Byrns, R. Donahue, J. Edighoffer, R. Gough, E. Hoyer, W. Leemans, J. Staples, B. Taylor and M. Xie.
25. "Higher Order Mode and Field Profile Measurements on the TRW/Stanford/LBL/BNL 2-Cell Niobium 500 MHz Superconducting Accelerator Structure," LBL-32178, published in the Proceedings of the 16th International Linac Conference, Ottawa, Ontario, August 23-28, 1992, with W. Barry, J. Edighoffer, G. Lambertson, K.-J. Kim, A. Schwettman, A. Marziali, S. Fornaca and I. Ben-Zvi..

26. "Design of A Superconducting Linear Accelerator for An Infrared Free Electron Laser of the Proposed Chemical Dynamics Research Laboratory at LBL," LBL-32182, published in the Proceedings of the 16th International Linac Conference, Ottawa, Ontario, August 23-28, 1992, with K.-J. Kim, R. Byrns, R. Donahue, J. Edighoffer, R. Gough, E. Hoyer, W. Leemans, J. Staples, B. Taylor and M. Xie.

27. "Highly Asymmetric ϕ^{o}–Factories Operated Transparently On B-Factories or Synchrotron Radiation Rings to Test the Nonlocality of Quantum Mechanics,” with P. Eberhard, LBL-32250, published in the Proceedings of the XVth International Conference on High Energy Accelerators (HEACC '92), Hamburg, Germany, July 20-24, 1992, Vol. II, pgs. 1160-1162.

28. "Electron Quantum Yields from a Barium Photocathode Illuminated with Polarized Light," LBL-33303, Dec. 1992, published in the Proceedings of the 1993 Particle Accelerator Conference, Washington, D.C., May 17-20, 1993, with M. Conde, K.-J. Kim, K.-N. Leung, and A.T. Young. Vol. IV, pgs. 3042-3044.

29. "Design of the Advanced Accelerator Test Beam Line at LBL," LBL-33308, Dec. 1992, published in the Proceedings of the 1993 Particle Accelerator Conference, Washington, D.C., May 17-20, 1993, with W. Leemans, G. Behrsing, K.-J. Kim, J. Krupnick, C. Matuk, F. Selph, and L. Stout, Vol. I, pgs. 83-85.

30. "Generation of Femtosecond X-Rays by 90˚ Thomson Scattering," LBL-34024, April 1993,

published in **Nuc. Instr. and Methods for Physics Research, A** 341, pp. 351-354, 1994, with K.-J. Kim, and C. Shank.

31. "Status of the LBL Experiment on Femtosecond X-Ray Generation Through 90^{o} Thomson Scattering," LBL-34971, Dec. 1993, Proceedings of the European Particle Accelerator Conference, London, England, June 27 - July 1, 1994, with W. Leemans, M. Conde, E. Glover, K.-J. Kim, R. Schoenlein, and C.V. Shank, Vol. 1, pgs. 828-830.

32. "Experiments on Plasma Production for the 50 MeV Plasma Lens Experiments at LBL," LBL-34972, Dec. 1993, published in the Proceedings of the European Particle Accelerator Conference, London, England, June 27 - July 1, 1994, with W. Leemans, B. van der Geer, M. de Loos, M. Conde, and R. Govil.

33. "Critical Issues in Low Energy Muon Colliders — A Summary**", Nuc. Instr. and Methods in Physics Research A**, Vol. 350, (1994), pp. 53-56, with B. Barletta, et.al.

34. "Advances in Beam Physics and Technology: Colliders of the Future", The Tamura Symposium, Austin Texas, November 1994, **AIP Conference Proceedings** 356, pp. 15-37.

35. "Accelerator Issues and Challenges at the isoSpin Laboratory", **Particle Accelerators**, 1994, Vol. 47, No. 3-4, pp. 119-126.

36. "Femtosecond X-rays from 90° Thomson Scattering", submitted to the 1995 Particle Accelerator Conference & International Conference on High Energy Accelerators, Dallas, Texas, with W. Leemans, R. Schoenlein, A. Chin, E. Glover, R. Govil, P. Volfbeyn, K.-J. Kim and C. Shank, December 1994.

37. "Design of a Relativistic Klystron Two-Beam Accelerator Prototype", abstract submitted to the 1995 Particle Accelerator Conference & International Conference on High Energy Accelerators, with G. Westenskow, G. Caporaso, Y. Chen, T. Houck, S. Yu, E. Henestroza, H. Li, C. Peters, L. Reginato and A. Sessler, published in the Proceedings.

38. "Linear Colliders with Gamma-Gamma Collisions — An Introduction**", Nuc. Instr. and Methods in Physics Research A**, (1995), Vol. 355, Issue 1, with B. Barletta, et. al.

39. "Free Electron Lasers for Gamma-Gamma Colliders — A Summary***",* Nuc. Instr. and Methods in Physics Research A**,** (1995), Vol. 355, with P. Morton.

40. "RF Power Source Development at the RTA Test Facility", with D. Anderson, S. Eylon, E. Henestroza, L. Reginato, A. Sessler, D. Vanecek, S. Yu, T. Houck, G. Westenskow, S. Lidia and G. Girodano, June 1996, LBNL-38938, Proceedings of EPAC'96.

41. "Generation of Femtosecond X-ray Pulses via Thomson Scattering of Terawatt IR Laser Pulses with Relativistic Electrons", A. Chin, R. Schoenlein, T. Glover, C. Shank, W. Leemans, P. Volfbeyn, R. Govil, K.-J. Kim and S. Chattopadhyay, Proceedings of CLEO/QUELS, Anaheim, CA, June 1996.

42. "Femtosecond X-ray Pulses at 0.4 Å by 90° Thomson Scattering: A new Tool for Probing the Structural Dynamics of Materials", with R. Schoenlein, et.al, ***Science*****, 274**, October 1996, p. 236.

43. "Laser-based Sub-picosecond Electron Bunch Characterization using 90 degrees Thomson Scattering", with W. Leemans, P. Volfbeyn, M. Zolotorev, K.-J. Kim, R. Schoenlein, P. Balling, V. Shank, A. Chin and E. Glover, **Phys. Rev. Lett**., 77, 4182 (1996).

44. "Interaction of Relativistic electrons with Ultrashort Laser Pulses: Generation of

Femtosecond X-rays and Microprobing of Electron Beams", with W. Leemans, et. al**., IEEE Journal of Quantum Electronic***s*, Vol. 33, No. 11, November 1997, p. 1925.

45. "A Proposal for a 1 GeV Plasma Wakefield Acceleration Experiment at SLAC", with T. Katsouleas, W. Leemans, R. Assman, P. Chen, R. Decker, S. Heifets, R. Iverson, T. Kostenoglou, S. Rokni, R. Siemann, D. Waltz, D. Whittum, C. Clayton, C. Joshi, K. Marsh and W. Mori, May 1997, PAC-97 Proceedings.

46. "Laser-based Sub-picosecond Electron Bunch Characterization using 90 degree Thomson Scattering", with W. Leemans, P. Volfbeyn, M. Zolotorev, K-J. Kim, R. Schoenlein, P. Balling, C. Shank, A. Chin and E. Glover, May 1997, PAC'97 Proceedings, LBNL-39950.
47. "Laser Driven Plasma based Accelerators: Wakefield Excitation, Channel Guiding and Laser Triggered Particle Injection", **Physics of Plasmas**, Vol. 5, No. 5, pg. 1615, May 1998, with W. Leemans, et. al.

48. "Photon-Electron Interaction and Condense Beams", Quantum Aspects of Beam Physics, **World Scientific**, with P. Chen, ed., pgs. 153-172, 1999.

49. "Development of Femtosecond X-ray Pulses based on the Electron Storage Ring", with A. Zholents, J. Byrd, H. Chong, T. Glover, P. Heimann, R. Schoenlein,C. Shank, M. Zolotorev, **IEEE Proceedings** of the 1999 Particle Accelerator Conference, New York City, NY, March 29 – April 2, 1999, LBNL-43042.

50. "Ultrashort Electron Bunches and Laser Channeled Wakefield Acceleration", with W. Leemans. L. Archambault, P. Catravas, S. DiMaggio, E. Esarey, K.-Z. Guo, C. Schroeder, B. Shadwick, P. Volfbeyn and J. Wurtele, **IEEE Proceedings** of the 1999 Particle Accelerator Conference, New York, NY, March 29 – April 2, 1999, LBNL-43046.

51. "Progress Toward E-157: A 1 GeV Plasma Wakefield Accelerator", with R. Assman, P. Chen, S. Chattopadhyay, et. al., **IEEE Proceedings** of the 1999 Particle Accelerator Conference, New York, NY, March 29 – April 2, 1999, LBNL-43310.

52. "Generation of Femtosecond Pulses of Synchrotron Radiation", with R. Schoenlein, H. H. W. Chong, E. Glover, P. Heimann, C. Shank, A. Zholents and M. Zolotorev, **Science**, March 24, 2000, pp:2237-2240.

53. "E-157: A 1.4 m long Plasma Wakefield Acceleration Experiment using a 30 GeV Electron Beam from the Stanford Linear Accelerator Center Linac", with M. Hogan, R. Assman, F. -J. Decker, R. Iverson, P. Raimondi, S. Rokni, R., H. Sieman, D. Walz, D. Whittum, B. Blue, C. E. Clayton, E. Dodd, R. Hemker, C. Joshi, K. A. Marsh, W. B. Mori, S. Wang, T. Katsouleas, S. Lee, P. Muggli, P. Catravas, S. Chattopadhyay, E. Esarey and W. P. Leemans**, Phys. Plasmas**, published 2000, Vol. 7, No. 5, p. 224.

54. "Plasma Focussing of High Energy Electron Beams", with R. Alley, P. Chen, et al**., Phys. Rev. Lett.**, March 2000.

55. "All Optical Accelerator Experiments at LBNL", with W. Leemans, et. al., Proceedings of LINAC 2000, August 21-25, 2000, Monterey, CA, USA, also published in **Phys. Rev. Spec. Topics – Accelerator and Beams**.

56. "Halo Particle Confinement in the VLHC using Optical Stochastic Cooling", with A. Zholents, W. Barletta and M. Zolotorev, **European Particle Accelerator Conference** 2000.

57. "ELIC: An Electron-Light Ion Collider Based at CEBAF", with L. Merminga, K. Beard, L. Cardman, Y. Chao, S. Chattopadhyay, K. de Jager, J. Delayen, Y. Derbenev, J.

Grames, A. Hutton, G. Krafft, R. Li, M. Poelker, B. Yunn and Y. Zhang, **EPAC Proceedings** of 2002, Paris, France, not yet published.

58. "The CEBAF-ER Experiment at Jefferson Lab", Proc. EPAC 2004, Lucern, Switzerland, July 2004 (with C. Tennant et al.)

59. "Emerging Concepts and Facilities in the THz and Infrared", Proc. EPAC 2004, Lucern, Switzerland, July 2004.

60. "Strange Quark Contributions to Parity-Violating Asymmetries in the Forward G0 Electron-Proton Scattering Experiment", Collaboration, G0, **Phys. Rev. Lett**. *95* 092001 (2005)

61. "Motivation and goals of ERL 2005", Proc. 32nd ICFA Advanced Beam Dynamics Workshop on "Energy Recovering Linacs," ERL 2005, workshop proceedings to be published in **Nucl. Instr. and Meth. in Phys. Res. A 557 (2006) 3-5**

62. "Strange Quarks in the Nucleon Sea – Results from HAPPEX-II", with K.A. Aniol et al., for the HAPPEX Collaboration, **Eur. Phys. J. A 31, 597-599 (2007)**

63. "Transverse Beam Spin Asymmetries in Forward-Angle Elastic Electron-Proton Scattering", D. S. Armstrong et al, for the G0 Collaboration, **Phys. Rev. Letters, April 2007; PACS numbers: 25.30.Bf,13.60Fz,13.40.-f,14.20.Dh.**

64. "Amazing particles and Light", Viewpoint, **CERN Courier, January-February, 2007.**

65. "Cockcroft's Subatomic Legacy", M. Poole, J. Dainton and S. Chattopadhyay, **CERN Courier, October, 2007.**

B. Accelerator-Physics Reports:

1. "On Stochastic Cooling of Bunched Beams from Fluctuation and Kinetic Theory," LBL-14826, 1982.

2. "Feasibility Study of Stochastic Cooling of Bunches in the SPS," CERN 84-15, 1984, p.197. Proc. CERN Accelerator School on Antiprotons for Colliding Beam Facilities, with D. Boussard. G. Dôme and T. Linnecar.

3. "Coherent Instability and Ion Trapping Considerations for Aladdin Lattices," LBL-19281, 1985.

4. "Accelerator Physics Experiments at Aladdin," LBL-l9905, UC-28, 1985, with M. Cornacchia, A. Jackson and M. Zisman.

5. "Feasibility Study of a Storage Ring for a High Power XUV Free Electron Laser", with J. Bisognano, M. Cornacchia, A. Garren, A. Jackson, K. Halbach, K.-J. Kim, H. Lancaster, J. Peterson, M. Zisman, C. Pellegrini and G. Vignola, presented at the 1985 Particle Accelerator Conference, Vancouver, B.C. Canada.

6. "Computation of an Invariant for the Synchro-betatron Motion," SSC-N-118, 1986, with E. Forest and B. Leemann.

7. "Estimates of RF Noise Effects in the SSC," SSC-N-150, 1986.

8. "Estimates of Some Beam Current Dependent Coherent and Incoherent Effects in the SSC," SSC-N

152, 1986.

9. "Accelerator Physics Code ZAP," LBL-21270, 1986, with M. Zisman and J. J. Bisognano.

10. "Dependence of Coherent Instabilities and Parasitic Heating on Vacuum Chamber Radius for the SSC," SSC-98, 1986, with H. Lee.

11. "Effect of Undulators and Wigglers on the Equilibrium Energy Spread and Emittance of Beam Bunches in the Sincrotrone Trieste", ST/M-87/3, 1987, with C. J. Bocchetta.

12. "Enhancement of Beam-Storage-Ring Coupling Impedance by Vacuum Chamber Restrictions at Undulator Gaps," ST/M-87/4, 1987.

13. "An Infrared Free Electron Laser Oscillator Driven by the Low Energy Injection Linac of the Sincrotrone Trieste," ST/M-87/6, 1987.

14. "Beam-Storage-Ring Coupling Impedances for the Sincrotrone Trieste," ST/M-87/8, 1987.

15. "Collective Instabilities and Beam Lifetime in the Sincrotrone Trieste," ST/M-87/9, 1987. C. J. Bocchetta.

16. "Feasibility Study for an Asymmetric B Factory Based on PEP," LBL PUB-5244, SLAC-352, CALT-68-1589, October 1989.
17. "Investigation of an Asymmetric B Factory in the PEP Tunnel," LBL PUB-5263, SLAC-359, CALT-68-1622, March 1990.

18. "Electron – Positron Factories," LBL-30858, with M. Zisman, et al., 1991.

19. "On Storage Rings for Short Wavelength FELs," LBL-28483, January 1990.

20. "Generation of Femtosecond X-rays by 90° Compton Scattering", with K.-J. Kim, and C. Shank, December 1992, LBNL-33074.

21. "Status of the 50 MeV Plasma Lens Experiments at LBL," LBL-34336, July 1993, with W. Leemans, E. Wallace, and A. Sessler.

22. "Experiment on Plasma Lens Focussing with a 50 MeV Electron Beam," LBL-34972, December 1993, with W. Leemans, B. van der Geer, M. de Los, and M. Conde.

23. "Electron Quantum Yields from Barium and LaB6 Photocathodes," LBL-35130, January 1994, with M.E. Conde, S.-I. Kwon, and K.-J. Kim, et al.

24. "Study on a Test of Optical Stochastic Cooling Scheme in a Single Pass Beam Line", with C. Kim, D. Massoletti, A. Zholents, M. Zolotorev and W. Wan, January 1997, LBNL-39788.

25. "Progress Toward E-157: A 1 GeV Plasma Wakefield Accelerator", with P. Catravas, E. Esarey, W. Leemans, P. Volfbeyn, et. al., CBP Note-318, LBNL-43310, March 1999.

26. Center for Beam Physics Annual Report 1998 – 2000, May 2000.

C. Workshop Proceedings:

1. "Investigation of Tolerances for the Parameters of the Proposed LBL Test-Bed Linear Induction Accelerator," Proc. Heavy Ion Fusion Workshop held at Lawrence Berkeley Laboratory, 1979, LBL-10301, SLAC-PUB-2575, UC-28, CONF-7910122, 1980, p.152, with A. Faltens, L. J. Laslett and L. Smith.

2. "Stability of the K-V Distribution in Long Periodic Transport Systems," Inertial Confinement Fusion Conference, San Diego, California, 1977, LBL Internal Reports HIFAN-13, 14, 15. with I. Hoffman, L. J. Laslett and L. Smith.

3. "RF Noise Considerations for the SSC," Proc. Ann Arbor Workshop on Accelerator Physics Issues for a Superconducting Super Collider, organized by the Division of Particles and Fields of the APS, 1983, Univ. of Michigan, Ann Arbor, Michigan, USA.

4. "On Damping Rings With Zero Momentum Compaction and Other Issues," Proc. ICFA Workshop on Low Emittance e^--e^+ Beams," BNL 52090, 1987, p. 76. with A. Chao, S. Y. Lee, L. Rivkin and R. Ruth.

5. "Theory and Analysis of Nonlinear Dynamics and Stability in Storage Rings – A Working Group Summary", Second ICFA Advanced Beam Dynamics Workshop on "Aperture Limitations in Storage Rings", July 1988, Lugano, Switzerland, LBL-25580.

6. "A Strategy for a Thorough Beam Stability and Aperture Analysis for a Storage Ring from Design Considerations", Second ICFA Advanced Beam Dynamics Workshop on Aperture Limitations in Storage Rings", July 1988, Lugano, Switzerland, LBL-25581.

7. "Workshop Summary," **AIP Conference Proceedings** 214, Beam Dynamics Issues of High Luminosity Asymmetric Collider Rings, Berkeley, California 1990, pp. 2-5, with A. Chao, et al..

8. "Electron Positron Factories--Physics Issues," Proc. of the 1990 Snowmass Summer Studies.

9. "Generation of Sub-Picosecond X-rays", with K.-J. Kim, Workshop on the 4th Generation Light Sources, SSRL/SLAC, February 24-27, 1992.

10. "Accelerator Issues and Challenges at the IsoSpin Laboratory," Proc. Post-Accelerator Issues at the IsoSpin Laboratory, held at the Lawrence Berkeley Laboratory, 1993, LBL-35533, CONF-93-10290.

11. "Critical Issues in Muon Colliders — A Summary", LBNL-33232, February 1994, published in the Proceedings of the Workshop on Beam Cooling and Related Topics, Montreux, Switzerland, October 3-8, 1993, with W. Barletta, S. Maury, D. Neuffer, A. Ruggierro and A. Sessler, pgs. 439-443.

12. "Exotic Colliders", 6th Workshop on Advanced Accelerator Concepts, The Abbey, lake Geneva, WI, June 12-14, 1994, LBL-36343, **AIP Conference Proceedings 335**, 190 (1995)

13. "Femtosecond X-ray Generation through 90° Thomson Scattering: Status of the LBL Experiment", 6th Workshop on Advanced Accelerator Concepts, The Abbey, lake Geneva, WI, June 12-14, 1994 LBL-36369, **AIP Conference Proceedings 335**, 209 (1995)

14. "Frontiers of Radiation Source Research", 4th International Conference on Synchrotron Radiation Sources, Kyongju, Korea, October 1995, LBL-37889.

15. "Studies of Laser-driven 5 TeV e+e- colliders in Strong Quantum Beamstrahlung regime", with M. Xie, T. Tajima and K. Yokoyo, October 12-18, 1996, Lake Tahoe, CA, USA, Proceedings of the AAC Workshop, LBL-40143, **AIP Conference Proceedings 398**, 167 (1997)

16. "Femtosecond X-rays Generated via Thomson Scattering of Terawatt laser Pulses with Relativistic Electrons", with R. Schoenlein, A. Chin, E. Glover, C. Shank, W. Leemans, P. Volfbeyn, K-J. Kim, Ultrafast Phenomena X, eds. P. Barbara, J. Fujimoto, W. Knox and W. Zinth, **Springer-Verlag, Berlin, Heidelberg**, 1996.

17. "Summary of Working Group #1: Beam Physics at High Energy Densities", with P. Chen, Proceeding of the Advanced Accelerator Concepts Workshop, Baltimore, MD, July 1998, published in **AIP Conference Proceedings Series 472**, pp.169-171.

18. "Hydrogen – Dr. Jekyll and Mr. Hyde: A Motivation for the Hydrogen Workshop at Jefferson Lab", with H. Padamsee, **AIP Conf. Proc. 671**, Proceedings of the First International Workshop on Hydrogen in Materials and Vacuum Systems, Myneni and Chattopadhyay, ed., November 2002.

19. "Motivation and goals of ERL 2005", Proceedings of the 32nd ICFA Advanced Beam Dynamics Workshop on "Energy Recovering Linacs, ERL 2005, Nikolitsa Merminga and Swapan Chattopadhyay, eds., workshop proceedings to be published in **Nucl. Instr. and Meth. in Phys. Res. A**

D. Review Articles, Technical and Popular and Public Interviews:

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2. "Advances in Beam Physics and Technology: Colliders of the Future", invited paper presented at the **Tamura Symposium** on Accelerator Physics, Austin, TX, USA, November 14-16, 1994, LBL-37966.

3. "Advanced Accelerator Technologies – A Snowmass '96 Subgroup Summary", with David Whittum and Jonathan Wurtele, June/July, 1996, LBNL-39655, published in **Snowmass'96**: Directions in High Energy Physics.

4. "Role of lasers in Linear Accelerators". August 1996, LINAC'96, published in Proceedings of **CERN** 96-07.

5. "Interactions of Relativistic Electrons with Ultrashort Laser Pulses: Generation of Femtosecond X-rays and Microprobing of Electron Beams", with W. Leemans, et. al., **IEEE J. of Quantum Electronics** 33, pg. 1925, May 1997.

6. "Alight a Beam and Beaming Light: A Theme with Variations, **Physics of Plasmas**, Vol. 5, Number 5, pg. 2081, May, 1998.

7. "Generation of Femtosecond X-ray Pulses via Laser-Electron Beam Interaction", with R. Schoenlein, H. H. W. Chong, T. E. Glover, P.A. Heimann, C.V. Shank, A. A. Zholents and M. S. Zolotorev, **Appl Phys**. B, 1-10, 2000.

8. "Femtosecond X-ray Generation through Relativistic Electron Beam-Laser Interaction", with W. P. Leemans, E. Esarey, A. Zholents, A. Chin, R. Schoenlein and C. Shank**, Comptes Rendus a l'Academie des Sciences**, to be published, 2000.

9. "Viewpoint: Accelerators for nano- and biosciences," **CERN Courier**, October 2002, p. 46.

10. "Education referendum is vital for area's future," Newport News Daily Press, Sept. 29, 2002, p. K1.

11. "Hurricane Isabel Tests Jefferson Lab's CEBAF Accelerator", **CERN Courier**, January/February 2004, page 33.

12. "The Indian Particle Man", BBC Radio 4, July 12, 2005, narrated by Dr. Sharon Ann Holgate and Mr. Saeed Jaffrey, produced by Julian Mayers

13. "Viewpoint: Amazing Particles and Light", **CERN Courier**, March 2007.

14. "Wakefield Studies at Cockcroft Institute", ICFA Beam Dynamics Special Edition, 2008.

E. Conceptual Design Reports:

1. "Conceptual Design of the Superconducting Super Collider," SSC Central Design Group, March 1986, SSC-SR-2020.
   Individual contributions:
   - Ch. 4.5
     - 4.5.1-4.5.66 pp 164-188
   - Ch 4.6
     - 4.6.1-4.6.3 pp 203-216
   - Ch 4.4
     - 4.4.10 pp 162-164
   - Ch. 5.8
     - 5.8.1-5.8.3 pp 404-410

2. "1-2 GeV Synchrotron Radiation Source, Conceptual Design Report," July 1986, LBL-PUB-5172 Rev.
   Individual contributions:
   - Ch 3.3
     - 3.3.2.1-3.3.2.5 pp.36-56
   - Ch. 3.9
     - 3.9.6 pp. 10, 109

3. "An Asymmetric B Factory Based on PEP," LBL PUB-5303, SLAC-372, CALT-68-1715, UCRL-ID-106426, UC-IIRPA-91-01, Feb. 1991. Overall coordination, production and editing.

4. "Chemical Dynamics Research Laboratory Conceptual Design Report," LBL PUB-5266. Overall coordination and production.

15. "An Infrared Free-Electron Laser for the Chemical Dynamics Research Laboratory - Design Report," LBL PUB-5335, Feb. 1992. Overall coordination, production and editing.

16. "Zeroth-Order Design Report for the Next Linear Collider", LBNL-PUB-5424, SLAC Report 474, UCRL-SI-124161, May, 1996. Individual contributions: Ch. 4: Damping Rings (pp. 115-256), Appendix A: Two-Beam Energy Upgrade (pp. 925-970), Appendix B: Gamma-Gamma Collision (pp. 971-1030).

17. "The CEBAF 12 GeV Upgrade", 2005.

F. Proposals, Reviews and Other Reports:

1. "Beam Dynamics Activities and Plans at LBL", contributed to the Beam Dynamics Newsletter of ICFA International, July 1988.

2. "Quantum Suppression of Beamsstrahlung:, with M. Xie, T. Tahima and K. Yokoya, ICFA Newsletter, 1997.

3. "A Proposal for an Experimental Test of Optical Stochastic Cooling in Duke Electron Storage Ring", with A. Zholents and V. Litvinenko, December 1998, CBP Tech. Note-183.

4. "A Proposal for Investigation of Laser-Driven and Plasma-based Accelerators", with W. Leemans and E. Esarey, November 1998, CBP Tech. Note-184.

5. "The Study of a High Average Power Free Electron Laser for Power Beaming", with A. Zholents, report submitted to Bennett Optical Research Inc., May 1999.

6. "A Material with a High Threshold for Breakdown under Electric Field and with an Optically

Switched Permitivity", with M. Zolotorev and A. Zholents, CBP Tech. Note-347, 1999.

7. "Ultrafast X-ray Science Facility at the Advanced Light Source", proposal to DOE Basic Energy Science, April, 2000.

8. "Development of a Low-level RF Control System and Integrated Test of a RIA Driver Cryomodule RF System", with J. Delayen, JLab-RIA-01, proposal to US-DOE, 2001.

9. "Advanced Accelerator Research and Development", JLab-NP-05, proposal to DOE Office of Science, March, 2002.

10. "Superconducting Radio Frequency (SRF) Research and Development", JLab-NP-04, proposal to DOE Office of Science, March, 2002.

11. "The Superconducting Module and Beam Test Facility", report on a national SRF initiative ; in preparation (with H. Edwards, N. Lockyer and S. Mishra).

12. "The Cockcroft Institute: The Case and Justification for Support", October 2008, submitted to the UK Research Council STFC.

G. Abstracts

1. "Conceptual Design of a Bright Electron Injector based on a Laser-Driven Photocathode RF Electron Gun," with Y. Chen, D. Hopkins, C. Kim, K.-J. Jim, A. Kung, R. Miller, F. Selph, A. Sessler and T. Young, 1988 **Linear Accelerator Conference**, October 2-7, 1988, LBL-25699a.

2. "Accelerator Physics Issues in Low Emittance Synchrotron Radiation Sources," AAAS Symposium on Synchrotron Radiation in San Francisco, CA, USA, January 16-17, 1989, LBL-259942a

3. "Estimate of Collective Effects for an Asymmetric B-Factory Based on PEP," with M. Zisman and Y. Chin, abstract submitted to the Spring Meeting of the American Physical Society, April 16-19, 1989, LBL-28233a.

4. "Novel Techniques for Single-Pulse Spectrum and Pulsewidth Measurement for an IR-FEL," with W. Leemans, J. Edighoffer and K.-J. Kim, submitted to the 14th Free Electron Laser Conference, August 23-28, 1992, LBL-32284a.

5. "Development of the Compact High Average Power IRFEL using Superconducting RF Linac and Photocathode Gun," with J. Edighoffer, K.-J. Kim, M. Xie, F. Dylla and R. Sheffield, abstract submitted to the 16th International Free Electron Laser Conference, Stanford, CA, USA, August 21-26, 1994, LBL-35553a.

6. "Femtosecond X-rays by Orthogonal Thomson Scattering," with A. Chin, E. Glover, K.-J. Kim, W. Leemans, R. Schoenlein and C. Shank, abstract submitted to the High Field Interaction and Short Wavelength Generation Topical Meeting, St. Malo, France, August 21-25, 1994, LBL-35778a.

7. "Information Processing and Phase Space Control at 100 THz," abstract submitted to the 1995 Particle Accelerator Conference & International Conference on High Energy Accelerators, Dallas, TX, USA, December 1994, LBL-36503a.

8. "Advanced Concepts for High Energy Accelerators," abstract submitted to the 1997 Joint APS/AAPT Meeting, Washington, DC, April 18-21, 1997, LBL-39953a.

9. "Ultrashort hard X-rays Produced through 90 degree Thomson Scattering:, with A. Chin, R. Schoenlein, W. Leemans, P. Volfbeyn, E. Glover, P. Balling, M. Zolotorev, K-J. Kim and C. Shank, ALS Compendium of User Abstracts and Technical Reports, 1997.

10. "Transverse Dynamics of a 30 GeV Electron Beam Propagating through a 1.5 m Plasma," with P. Muggli, P. Catravas, E. Esarey, W. Leemans, P. Volfbeyn, R. Assman, F. Decker, M. Hogan, R. Iverson, S. Rokni. R. Sieman, D. Waltz, D. Whittum, B. Blue, E. Clayton, R. Hemker, C. Joshi, K. Marsh, W. Mori, S. Wang T. Katsouleas and S. Lee, APS-DPP Meeting in Seattle, WA, USA, November 15-19, 1999, **Bull. Am. Phys. Soc**.

11. "Interaction of a 30 GeV Beam with a Self-produced Helium Plasma," with S. Wang, P. Catravas, E. Esarey. W. Leemans, P. Volfbeyn, R. Assman, F. Decker, M. Hogan, R. Iverson, S. Rokni. R. Sieman, D. Waltz, D. Whittum B. Blue C. Clayton, R. Hemker, C. Joshi, K. Marsh, W. Mori, T. Katsouleas, S. Lee and P. Muggli, **APS-DPP Meeting** in Seattle, WA, USA, November 15-19, 1999, **Bull. Am. Phys. Soc**.

12. "OTR Measurements of a Plasma Wakefield Experiment at 30 GeV,", with P. Catravas, S. DiMaggio, E. H. Esarey, W. P. Leemans, P. Volfbeyn, R. Assman, F. -J. Decker, R. Iverson, M. J. Hogan, S. Rokni, R., H. Sieman, D. Waltz, D. Whittum, C. Clayton, R. Hemker, C. Joshi, K. Marsh, W. B. Mori, S. Wang, T. Katsouleas, S. Lee and P. Muggli, **APS-DPP Meeting in Seattle, WA.,** Nov. 15-19, 1999**, Bull. Am. Phys. Soc.**

13. "Optical Stochastic Cooling and Femtosecond X-ray Generation," with A. Zholents, R. Schoenlein and M. Zolotorev, **APS Spring Meeting**, Long Beach, CA, USA, April, 2000.

14. "Halo Particle Confinement in the VLHC using Optical Stochastic Cooling," with A. Zholents, W. Barletta and M. Zolotorev, **EPAC 2000**.

15. "The Frontier of Ultrashort Pulse Techniques: Probing the Quantum Limit of Rapidity," Particle Accelerator Conference, **PAC 2001**.

16. "CEBAF Energy Recovery Experiment." Particle Accelerator Conference, **PAC 2003**.

17. "The Emerging Concepts in Long Wavelength THz/.Infrared radiation Sources", EPAC, 2005.

H. Editorships, Books, Etc.:

1. Series Editor, "The Physics and Technology of Particle and Photon Beams" — a series of monographs published by Harwood Academic Publishers (Vol. 1-7, Vol. 8 under preparation).

2. Guest Editor, Special Issue, "Impedance Beyond Cutoff," **Particle Accelerators**, 1990, Vol. 25, No. 2-4.

3. Guest Editor, Special Issue, "Post-Accelerator issues at the Isospin Laboratory," **Particle Accelerators**, 1994, Vol. 47, No. 3-4.

4. Guest Editor, Special Issue, "Proceedings of the Worship on Gamma-Gamma Colliders," Berkeley, CA, USA, March 28-31, 1994, "**Nucl. Instr. and Meth. in Phys. Res. A,** Vol. 355, 1995, No. 1, pp.1-194.

5. Editor, "Proceedings of the 7th Workshop Advanced Accelerator Concepts," Granlibakken, Lake Tahoe, CA, USA, October 12-18, 1996, **AIP Conference Proceedings** 398.

6. Editor, "Nonlinear and Collective Phenomena in Beam Physics," Archidosso, Italy, 1996 and 1998, **AIP Conference Proceedings,** 395 and 468.

7. Guest Editor, Special Issue, "Proceedings of the International NuFACT'00 Workshop," May 16-29, 2000, Monterey, CA, USA, **Nucl. Instr. and Meth. in Phys. Res. A.**

8. "Beam Instabilities," (with M. Furman and J. Byrd), LBNL-35528, Chapter 12 in Synchrotron Radiation Sources – A Primer, World Scientific Publishers, Herman Winick, editor, (1995).

9. Editor, "ICFA Beam Dynamics Newsletter," December 2001.

10. Editor, "Hydrogen in Materials," (with G. Myeni), Proceedings of Workshop at Jefferson Lab, November 10-12, 2002, Newport News, VA, USA, **AIP Conference Proceedings** 671, July 2003.

11. Editor, 32nd ICFA Advanced Beam Dynamics Workshop on "Energy Recovering Linacs 2005", (with L. Merminga), Elsevier 2006, **Nucl. Instr. and Meth. in Phys. Res. A, Vol. 557, No. 1.**

12. Editor, "Polarized Anti-Protons", **AIP Conference Proceedings, 2008.**

13. Editor, "Nonlinear QED in Electron-Positron Collisions", to be published in **AIP Conference Proceedings Series, 2009.**

I. Invited Talks

1. "Stability of the K-V Distribution in Long Periodic Transport Systems," Inertial Confinement Fusion Conference, San Diego, California, 1977.

2. "Bunched Beam Stochastic Cooling," Physics Department Weekly Colloquium, Univ. of Maryland, March, 1982.

3. "Stochastic Cooling of Short Bunches in Large Hadron Colliders," Invited Talk at the Plasma Physics Weekly Colloquium, Massachusetts Institute of Technology, March 1982.

4. "Stochastic Cooling of Bunches in the Fermilab Tevatron," Invited Talk given at the Fermilab Accelerator Physics Seminar, March 1982.

5. "Bunched Beam Stochastic Cooling in the SPS," Invited talk at CERN, SPS Division, November 1982.

6. "The Accelerator Physics Code ZAP," talk given as a distinguished Brookhaven Visiting Scientist, December 1985.

7. "Stochastic Cooling," talk given as a distinguished Brookhaven Visiting Scientist, December 1985.

8. "Bunched Beam Stochastic Cooling," talk given as a distinguished Brookhaven Visiting Scientist, December 1985.

9. "Effects of Undulators and Wigglers on Storage Ring Beam Dynamics," Invited Talk at the Adriatico Research Conference, International Center for Theoretical Physics, Trieste, Italy, June, l987.

10. "Physics of Low Emittance Beams in Storage Rings," Invited Talk given at the APS General Spring Meeting in Baltimore, Maryland, April 1988.

11. "Accelerator Physics Issues in Low Emittance Synchrotron Radiation Sources," Symposium on

Synchrotron Radiation in San Francisco, CA, USA, January 16 & 17, 1989.

12. "On Asymmetric Colliders as BB Factories," Int. Conference in High Energy Accel., Tsukuba, Japan, August, 1989.

13. "On stability of High Brilliance Storage Rings," Synchrotron Radiation Instrumentation Conference. Berkeley, 1989.

14. "Prospects for a Redesigned PEP Collider," SLAC Scientific Policy Committee Meeting, Stanford, 1989.

15. "Redesigned Asymmetric PEP Collider Revisited," talk at the Experimental Program Advisory Committee Meeting, SLAC, 1990.

16. "On Storage Ring FELs for Short Wavelengths," SPIE Conference, Los Angeles, 1990.

17. "High Luminosity B-Factories," at the US Particle Accelerator School at Hilton Head, South Carolina, November 1990.

18. "Perspectives in Future Radiation Sources," at the International Conference on Synchrotron Radiation Sources, Indore, India, February 1992.

19. "Design of Asymmetric ϕ-Factories to Study Quantum Mechanics," at the UCLA Workshop on Asymmetric Phi Factories, UCLA, October, 1992.

20. "Critical Issues in a Muon Collider — A Summary," at the Workshop on Beam Cooling and Related Topics, Montreux, Switzerland, October 1993.

21. "Exotic Colliders of the Future," at the Advanced Accelerator Concepts Workshop at The Abbey, Wisconsin, June 1994.

22. "Optical Stochastic Cooling and Femtosecond X-ray Experiments at LBL," CERN Colloquium, August 1994.

23. " Femtosecond X-rays," Optical Society of America, High Field Interactions Topical Conference, St. Malo, France, August 1994.

24. "Progress and Perspectives in Colliders and Beam Physics," The Tamura Symposium, UT Austin, November 1994.

25. "Unconventional Colliders of the Future," The Tamura Symposium, UT Austin, November, 1994.

26. "Beam Dynamics Challenges in Laser Acceleration Schemes," LBNL Mini-Symposium on Laser Acceleration, February 1995.

27. "Phase Space Cooling of Antiprotons," UC Berkeley, Freschcrift in honor of Owen Chamberlain's 70th birthday, UC Berkeley, July, 1995.

28. "Parlez-vous Beams? - Exploring today's Accelerators and Lasers," LBNL Summer Lecture Series, July 1995.

29. "Frontiers of Radiation Source Research: Optical Control of Beams," 10th ICFA Beam Dynamics Panel Workshop on Fourth Generation Light Sources, ESRF, Grenoble, France, January 22-25, 1996.

30. "Role of Lasers in Beam Physics," SLAC Department Colloquium, Stanford University, February 26, 1996.

31. "Optical Stochastic Cooling," APS/AAPT Annual Spring Meeting, Indianapolis, Indiana, May 1-5, 1996.

32. "Laser Manipulation of Beams," PAC'97, Vancouver, British Columbia, May, 1997.

33. "Role of Lasers in Linear Accelerators," Geneva, Switzerland, LINAC'96, August 24-28, 1996.

34. "Optical Stochastic Cooling," Distinguished Visiting Scientist Lecture at the Advanced Science Research Center, JAERI at Tokai-Mura, October 12, 1996.

35. "Optical Control of Beams: Frontiers of Radiation Sources," Spring-8 Colloquium, Harima Garden City, October 16, 1996.

36. "Frontiers of Radiation Sources," Fourth SRI Conference in Kyongju, Korea, October 24-27, 1996.

37. "Beam Diagnostics Work at LBNL," CESTA, Bordeaux, France, August 19, 1996.

38. "Femtosecond X-rays by Orthogonal Thomson Scattering," CEN, Saclay, France, August 23, 1996.

39. "Role of Lasers in Linear Accelerators," August 30, 1996, LINAC'96, Geneva, Switzerland.

40. "Status of Advanced Concepts in Accelerators," AAC'96, Lake Tahoe, CA, Welcome and Summary Talks, October 12-18, 1996.

41. "Summary of AAC'96," Future High Energy Collider Symposium, Institute of Theoretical Physics, UC Santa Barbara, CA, October 25, 1996.

42. "Ultrashort X-ray Pulses: Production and Scientific Use," Variable Energy Cyclotron Center, VECC, Calcutta, India, January 2, 1997.

43. "Femtosecond X-rays," Center for Cellular and Molecular Biology, Hyderabad, India, January 7, 1997.

44. "Particle Storage Rings and Lasers: A Theme with a Tune," International Conference on Dynamical Systems, Indian Institute of Science, Bangalore, India, January 9-16, 1997.

45. "Principles of Acceleration Mechanisms", "Stochastic Phase Space Cooling" and "Femtosecond X-rays," Center for Advanced Technology, Indore, India, Winter School on Beam Physics, January 13-25, 1997.

46. "Beams and Nonlinearities," Phys. 250 Seminar on Nonlinear Dynamics at UC Berkeley, April 9, 1997.

47. "Advanced Concepts for High Energy Accelerators," Joint APS/AAPT Spring Meeting, Vancouver, Washington, DC, April 18-22, 1997.

48. "Laser Manipulation of Beams," Plenary Talk at PAC'97, Vancouver, British Columbia, May 15, 1997.

49. "Advanced Accelerator Techniques at LBNL," HEPAP Subpanel, SLAC, June 25,1997.

50. "Alight, Beam and Beaming Light: A Theme with Variations," 39th Annual Meeting of the APS Division of Plasma Physics, Pittsburgh, PA, November 17-21, 1997.

51. "Laser Manipulation of Beams," Seminar presentation at the SPring-8 Facility, Himeji, Japan, December 16, 1997.

52. "Optical Manipulation of Particle Beams," Quantum Aspects of Beam Physics (QABP'98) Workshop, Monterey, CA, January 1998.

53. "Advanced Collider Physics at LBNL – Optical Techniques for Beams," HEPAP Subpanel on High Energy Physics, February 1998.

54. "Particle and Light Beams: The Sky is Not A Limit," featured speaker at the High Desert Engineer's Association (HiDEA) on the National Engineer's Day Evening Banquet, March, 1998.

55. "Optical Manipulation of Particle Beams," JIFT Workshop, LLNL, November, 1998.

56. "Dark Matter Search Using Fluctuations in an Electromagnetic Cavity," COSMO'98 Conference, Asilomar, CA, December 1998.

57. "Beams under Extreme Conditions - High Density, Low Temperature and High Energy," lecture's at the Autumn College in Plasma Physics, Abdus Salam ICTP, Trieste, Italy, October, 1999.

58. "Colliders of the Twenty First Century," at Calcutta University Science College, Calcutta, India, December 1999.

59. "Accelerators for the New Millennium," Alumni Lecture at St. Xavier's College, Calcutta, India, December 1999.

60. "Femtosecond X-rays: Techniques and Science," Colloquium at the Indian Association for the Cultivation of Science, Calcutta, India, January 2000.

61. "Beam Physics at the Frontier of Space, Time, Energy and Matter Scales," plenary speaker at the AAC 2000 Workshop, Santa Fe, New Mexico, June, 2000.

62. "John Dawson: An Outsider's Perspective," freschcrift for John Dawson's 70th birthday, at AAC 2000, Sante Fe, New Mexico, June 2000.

63. "Changing of the Guard: Berkeley Physics," Banquet speech for the UC Berkeley Physics Department in honor of outgoing Chair Roger Falcone and incoming Chair Chris McKee, July, 2000.

64. "Attosecond Pulses towards Studies of Quantum Disentanglement and Control," plenary talk given at the Quantum Aspects of Beam Physics, QABP 2000, in Capri, Italy, October, 2000

65. "Probing the Structure and Function of Matter: Rising Technologies and New Dimensions," presentation for the JLab Interview Colloquium, Newport News, Virginia, November 20, 2000.

66. "Vacuum: Inner and Outer Dimensions," talk given at the Unruh Radiation Meeting, Newport News, Virginia, March 27, 2001.

67. "Vacuum: Inner and Outer Dimensions," talk given at the American Vacuum Society Meeting,

Newport News, Virginia, June 7, 2001.

68. "The Frontier of Ultrashort Pulse Techniques: Probing the Quantum Limit of Rapidity," talk given at the Particle Accelerator Conference Session TOP A001, Chicago, Illinois, June 19, 2001.

69. "Accelerator Operations and Development," talk given at the User's Group Meeting, Newport News, Virginia, June 20, 2001.

70. "Ultrafast Probing of the Structure and Function of Matter: Concepts, Techniques, and Technologies," talk given at CERN/DESY/PSI/BESSY Conferences, Europe, June 27-July 5, 2001.

71. "Status of the CEBAF Accelerator," talk given at the CLAS Collaboration Meeting, Newport News, Virginia, October 25, 2001.

72. "New Dimensions in Probing the Structure and Function of Matter: Concepts, Techniques and Technologies," talk given at the UVA Colloquium, Charlottesville, Virginia, December 7, 2001.

73. "New Dimensions in Probing the Structure and Function of Matter: Concepts, Techniques and Technologies," talk given at the Virginia Tech Colloquium, Blacksburg, Virginia, March 15, 2002.

74. "Accelerator Division: CEBAF Operations, Accomplishments and Budget Impacts," talk presented to Dennis Kovar (DOE), Newport News, Virginia, March 26, 2002.

75. "JLab Accelerator Program: Operation, Upgrade and New Initiatives," talk given at the SURA Board of Trustees Meeting, Nashville, Tennessee, April 30, 2002.

76. "Jefferson Lab Overview," talk given at the Industrial Advisory Board Meeting for the Laser Applications in Manufacturing Center, Newport News, Virginia, June 24, 2002.

77. "Accelerator Science and Technology at JLab," talk given at the JLab Institutional Plan Review, Newport News, Virginia, August 20, 2002.

78. "Challenges in Future Linear Colliders," with Kaoru Yokoya, talk given at IFCA Nanobeam Conference '02, Lausanne, Switzerland, September 2-6, 2002.

79. "Accelerator Physics and Technology: Now and in the Future," talk given at the JLab Science Policy Advisory Group Meeting, Newport News, Virginia, October 3, 2002.

80. "Biomedical Applications of Accelerator and Detector Technologies: Attracting New Business to Virginia," with H. Dylla, M. Smith, G. Williams, and D. Miller, talk given at the Governor's Advisory Board Initiative on Biotechnology Meeting, Williamsburg, Virginia, October 4, 2002.

81. "Accelerator and FELs at JLab: Operations, R&D, Staffing and Leadership," talk given at the Institutional Management Review, Newport News, Virginia, October 22-23, 2002.

82. "Accelerator Development for Nuclear Physics," talk given at the CEBAF User's Group Board of Directors Meeting, Newport News, Virginia, October 25, 2002.

83. "Jefferson Lab Overview," Colloquium given at the Virginia Institute of Marine Science and the College of William and Mary Meeting, Gloucester, Virginia, November 1, 2002.

84. "12 GeV Upgrade," talk given at the Hall D Collaboration Meeting at IU, Bloomington, Indiana, November 2, 2002.

85. "Scientific Opportunities with Coherent THz, Infrared, and Ultraviolet Light at the Jefferson Lab

Free-Electron Laser with Energy Recovery", with Gwyn Williams, talk given at the DOE/BESAC Facilities Planning Subcommittee meeting, Rockville, Maryland, February 22, 2003.

86. "Accelerator Development and Operations for Nuclear Physics", talk given at the Jefferson Lab User's Group Board of Directors Meeting, March 7, 2003.

87. "From Quark Confinement to Unruh Radiation and Microwave Superconductivity to Terahertz Spectroscopy", Seminar and Colloquia presentation at University of Maryland, March 14, 2003; JLab Graduate Student Seminar, April 9, 2003; seminar at Oak Ridge National Laboratory, August 15, 2003; and colloquium at the Michigan State University National Superconducting Cyclotron Center, January 29, 2004.

88. "Science and Scientific Tools at Jefferson Lab – From Quark Confinement to Microwave Superconductivity", Seminar in Physics Department, Harvard University, April 30, 2003.

89. "Jefferson Lab in the Hampton Roads", presentation to the Leadership Institute of the Virginia Peninsula, April 3, 2003.

90. "Emerging Centers of Excellence at Jefferson lab", SURA Board of Trustees Meeting, April 29, 2003.

91. "Jefferson Lab Accelerator Developments for Nuclear/Particle Physics", Conference on the Intersection of Particle and Nuclear Physics (CIPNP), New York, May 23, 2003.

92. "SRF Science and Technology – Key Technical Issues and R&D at Jefferson Lab", presented at the DOE/HEP RF Superconductivity Workshop, Bethesda, Maryland, July 29, 2003.

93. "Nanobeams, Proton Drivers and Free Electron Lasers", invited talk presented at the Interaction Meeting on Linear Colliders and Neutrinos, Indian National Academy Science, New Delhi, India, November 10, 2003.

94. "Jefferson Lab: R&D Profile and Role in the US Rare Isotope Accelerator", presented in Puri, India, February 16, 2004, at the Radioactive Ion Beams Workshop, organized by the Variable Energy Cyclotron Center of Kolkata, India.

95. "Physics of and with Ultrabright, Ultracold and Ultraintense Beams – A Theme with Extreme Variations", Seminar, MIT Laboratory of Nuclear Sciences, September 10, 2004.

96. "From Quark Confinement to Protein Dynamics via Energy recovery and Attosecond Pulses", Inaugural Lecture at the John Adams Institute of Accelerator Science at Oxford/RHUL, Oxford University, Oxford, October 25, 2004.

97. "EPAC 0C/PC 2004, PAC'05 Invited Program, Report from Program Chair, Frascati, Italy, October 28, 2004

98. "Jefferson Lab, ILC and SMTF", DOE/HEP Briefing on SMTF, Germantown, MD, November 4, 2004

99. "CEBAF Accelerator Operations", with A. Hutton, User's Group Board of Directors Meeting, Jefferson Lab, Newport News, VA, November 11, 2004

100. "Discussion Points with Dennis Kovar, DOE/NP on JLAB SRF Proposal", Kovar Meeting, Jefferson Lab, Newport News, VA, November 12, 2004

101. "Role of India in Large Scale International Accelerator Projects: The International Linear Collider

and Microwave Superconductivity", Address at the 3rd Pravasi Bharatiya Divas, Mumbai, India, January 8, 2005

102. "PAC 2005 Scientific Program Committee Meeting", 2nd PAC'05 Organizing Committee Meeting, Dulles, VA, January 28, 2005

103. "Jefferson Lab Developments towards the ILC and US - Japan Collaboration", US-Japan Collaboration Meeting, Jefferson Lab, Newport News, VA, February 7, 2005

104. "2005 SC Laboratory Business Plan Presentation Outline", Courtyard Marriott, Newport News, VA, March 16, 2005

105. "Introduction to Workshop Goals, Opening Plenary", ICFA ERL Workshop March 19 - 23, 2005, Jefferson Lab, Newport News, VA

106. "ERL Workshop Slideshow", ICFA ERL Workshop March 19 - 23, 2005, Jefferson Lab, Newport News, VA

107. "A Portrait of Jefferson Lab -- SRF-based Accelerator Science and Technology", TESLA Collaboration Meeting, DESY, Hamburg, Germany, March 30 – April 1, 2005

108. "CEBAF Facility -- Operation, Cost Model and Core Competencies in Support of SC Agenda", NSAC Presentation, Jefferson Lab, Newport News, VA, April 3, 2005

109. "Jefferson Lab at the Global Frontier of Science and Technology", SURA BOT Meeting, Washington DC, April 7, 2005

110. "CEBAF Facility -- Operation, Cost Model and Core Competencies of JLAB", Orbach Meeting, Washington DC, April 26, 2005

111. "PAC05 Workshop Slideshow", PAC'05 Conference May 15-20, 2005, Knoxville, TN

112. "PAC05 Introduction to Einstein Session", PAC'05 Conference May 15-20, 2005, Knoxville, TN

113. "A Portrait of Jefferson Lab -- SRF-based Accelerator Science and Technology", Peking University and IHEP, Beijing, PRC, June 9 – 10, 2005

114. "Accelerator Facilities Probing the Physics of Scales: The 12 GeV Upgrade of CEBAF in Sear of Quark Confinement'", Conference on Scales in Nuclear Physics, Kolkata, India, June 15, 2005

115. "Einstein's Legacy in Particle Acceleration and Emerging Sciences of the Twenty First Century", Raja Ramanna Memorial Inaugural Lecture, Variable Energry Cyclotron Centre, Govt. of India, Kolkata, India, June 17, 2005

116. "Accelerators at Jefferson Lab -- Physics Results, Operation, 12 GeV Upgrade and Accelerator R&D", Seminar Talk/Cornell University, Ithaca, NY, July 8, 2005

117. "Accelerator Overview and Future Directions", Science and Technology Review, Jefferson Lab, Newport News, VA, August 30, 2005

118. "Einstein's Legacy in Charged Particle Acceleration", John Adam's Institute Lecture, Oxford, UK, November, 2005.

119. "The Indian Particle Man", BBC Radio 4 Interview, produced by Institute of Physics, UK and broadcast on January 11, 2005 at the start of the World Year of Physics, as a tribute to Prof. S.N.Bose's legacy and his collaboration with Albert Einstein. The interview contained dialogues

with Prof. Boses's grandson Falguni Sarkar and his students.

120. "Accelerators of the Twenty-First Century", Accelerator and Fusion Research Division Colloquium, Center for Beam Physics, January, 2006, Lawrence Berkeley National Laboratory.

121. "Microwave Superconductivity and Advanced Accelerator Technologies for probing the Structure and Function of Matter", Colloquium at the Cockcroft Institute, June 19, 2006, Daresbury Science and Innovation Campus, UK.

122. "Phase Space Cooling and Cold Electron Beams", Invited talk at PQE Conference, January 2007.

123. "Advances in Microwave Superconductivity and Energy Recovery Techniques for Colliders and Light Sources", Invited Plenary talk at the Asian Particle Accelerator Conference (APAC), January 29-February 2, 2007, Raja Ramanna Center for Advanced Technology, Indore, India.

124. "Amazing Particles and Light: Beaming onto Matter and Life", the 44th Meghnad Saha Memorial Lecture, February 5, 2007, Saha Institute of Nuclear Physics, Kolkata, India. (the series had Neils Bohr, Lawrence Bragg, S. Chandrasekhar, P.A.M.Dirac, Neville Mott, etc. in the past as eminent speakers).

125. "Amazing Particles and Light: Challenges and Future Perspective", Inaugural Lecture at the Inaugural Symposium of the Cockcroft Institute, February 15, 2007, Daresbury Science and Innovation Campus, UK.

126. "Novel Accelerator Concepts and Their Scientific Reach", Invited talk at the American Physical Society Spring Meeting, April 13-17, 2007, Jacksonville, Florida, USA.

127. "Accelerators and Colliders of the Twenty-first Century", European Physical Society High Energy Physics Conference, July, 2007, Univ. of Manchester, UK.

128. "Extreme Beams", Lancaster University Christmas Lecture, December 17, 2007.

129. "Cockcroft's Subatomic Legacy: Accelerators of the Twenty-first Century", Sir John Cockcroft Chair Inaugural Lecture, Univ. of Liverpool, January 27, 2008.

130. "Frontiers of Charged Particle Beams", Harish-chandra Research Institute Lecture, March 5, 2008.

131. "Parlez-vous Beams? Probing Nano-space for Fleeting Femto-moments", Rutherford Lab Colloquium, April, 2008.

132. "Prospects of Large Hadron electron Collider (LHeC) in the LEP tunnel at CERN", invited talk at EIC Conference, Hampton University, Hampton, Virginia, USA, July, 2008.

133. "Ultra-bright, Ultra-cold and Ultra-short Beams: Challenges and prospects", Cavendish Physical Society Lecture, Cavendish Lab, Univ. of Cambridge, February 23, 2009.