

May, 2017

## PROFESSIONAL RESUME

***Prof. Swapan Chattopadhyay, Ph.D. (Berkeley)***  
***FRSA (UK), F.Inst.P (UK), Fellow APS (USA) and Fellow AAAS (USA)***

*Professor, Research Scientist, Scientific Director and Project Leader*

515 Pheasant Trail, St. Charles, Illinois 60174, USA

**BIRTH:** December 26, 1951; Calcutta, India  
**CIVIL STATUS:** Married; two daughters  
**CITIZENSHIP:** U. S. (naturalized as Swapan Chaterji)  
**OTHER RESIDENCE:** India (1951-1972), UK (2007-2014)

### **PRESENT POSITION (2014 - present) :**

Distinguished Scientist  
Member, Director's Senior Leadership Team  
Fermi National Accelerator Laboratory  
Mail Stop 321, IARC  
Fermilab, P.O.Box 500, Batavia, Illinois 60510, USA  
swapan@fnal.gov, tele: +1-630-840-3636

And

Presidential Chair for Research, Scholarship and Artistry  
Professor of Physics and Director of Accelerator Research  
230 A La Tourette Hall  
Department of Physics  
Northern Illinois University, DeKalb, Illinois 60115, USA  
[schaterji@niu.edu](mailto:schaterji@niu.edu)

### **IMMEDIATE PAST POSITION (2007 – 2014):**

Sir John Cockcroft Chair of Physics, Universities of Liverpool, Manchester and Lancaster, UK and  
Inaugural Director, Cockcroft Institute of Accelerator Science and Technology  
Sci-Tech Daresbury, Keckwick Lane, Daresbury, Warrington, WA4 4AD, Cheshire, United Kingdom

### **Other Affiliations (past and present) :**

Honorary Scientific Associate, CERN (2008 - present).  
Visiting Professor of Physics, University of Oxford (2015 - present).  
Visiting Professor, La Sapienza University of Rome (2016)  
Director Emeritus, Cockcroft Institute, UK and Honorary Professor, University of Liverpool, UK (2014 - present).  
Visiting Professor/Scholar, University of California at Berkeley (1988-1990, 1998-2000, 2009-2011, 2013 - 2015).  
Visiting Professor, Imperial College, London, UK (2009 – 2014).  
Visiting Professor, Harvard University (2008-2009).  
Adjunct Professor, Department of Physics, University of Virginia at Charlottesville, USA (2003-2012).  
Visiting Professor, Department of Physics, University of Illinois at Urbana-Champaign, USA (1991).

## EDUCATION:

B.Sc.	St. Xavier's College Calcutta University, Calcutta, India.	1970	Honors in Physics (Minors in Mathematics and Chemistry)
M.Sc.	Indian Institute of Technology Kharagpur, India.	1972	Physics (Special Studies in Particle Physics)
M.S.	University of California at Berkeley Berkeley, California USA	1980	Physics
Ph.D.	University of California at Berkeley Berkeley, California USA	1982	Physics

Doctoral dissertation in theoretical physics. *Thesis Title*: "On Stochastic Cooling of Bunched Beams from Fluctuation and Kinetic Theory". *Thesis Advisors*: Prof. Joseph Bisognano, Prof. Owen Chamberlain, and Prof. Wulf Kunkel.

## PROFESSIONAL EXPERIENCE:

**1972-1974**: Teaching and Research Assistant, Dept. of Physics and Institute of Theoretical Physics, Univ. of Oregon, Eugene, Oregon, USA, under the tutelage of Prof. Michael Moravcsik and Prof. Rudolph Hwa  
**1974-1976**: Teaching and Research Assistant, Dept. of Physics, Univ. of California at Berkeley, California, USA, under the tutelage of Prof. Fredrick Reif and Prof. Geoffrey Chew  
**1976-1982**: Graduate Student Research Assistant, Lawrence Berkeley Laboratory and Dept. of Physics, Univ. of California at Berkeley, California, USA, under the tutelage of Prof. Joseph Bisognano, Prof. Owen Chamberlain and Prof. Wulf Kunkel  
**1982-1984**: Scientific Associate (Attaché Scientific) at CERN, Geneva, Switzerland, collaborating with Dr. Daniel Bussard, Dr. Simon van der Meer and Prof. Carlo Rubbia  
**1984-1985**: Staff Scientist II/Physicist, Lawrence Berkeley Laboratory, Univ. of California, Berkeley, California (member of the Exploratory Studies Group headed by Dr. Max Cornacchia)  
**1985-1986**: Staff Scientist III/Physicist, Lawrence Berkeley Laboratory, Univ. of California, Berkeley, California  
**1987 - 1991**: Group Leader, Exploratory Studies Group, Accelerator and Fusion Research Division, Lawrence Berkeley Laboratory, Univ. of California, Berkeley, California  
**1992-2001**: Founder/Director, Center for Beam Physics and Senior Scientist/Physicist, Lawrence Berkeley Laboratory, Univ. of California, Berkeley, California  
**1999-2001**: Divisional Deputy for Strategy, New Initiatives and Program Development, General Sciences Directorate, Lawrence Berkeley National Laboratory, Univ. of California, Berkeley, California  
**1988-1990, 1998-2000, 2009-2011**: Visiting Professor, University of California at Berkeley, Physics Department  
**1991**: Visiting Professor, University of Illinois at Urbana-Champaign  
**1995**: Japan Atomic Energy Research Institute (JAERI) Distinguished Visiting Scientist  
**2001-2007**: Associate Laboratory Director (Accelerator Division), Special Scientist, and Executive Member of Director's Council, Thomas Jefferson National Accelerator Facility  
**2003-2012**: Adjunct Professor of Physics, University of Virginia at Charlottesville  
**2002-2007**: Chair, JLab Research Operations Committee, Thomas Jefferson National Accelerator Facility  
**2002-2007**: Chair, Director's Strategic Planning Working Group, Thomas Jefferson National Accelerator Facility  
**2001-2005**: Governor's Advisory Committee on the Virginia Biotechnology Initiative, Commonwealth of Virginia  
**2007-2014**: Inaugural Director, Cockcroft Institute, UK; Sir John Cockcroft Professor of Physics, Universities of Liverpool, Manchester and Lancaster, United Kingdom; Distinguished University Professor, Lancaster University, UK; Visiting professor, Imperial College, London, UK.; Member (ex-officio), Governing Board and Chair, Executive Management Committee, Cockcroft Institute; Member (ex-officio), Cockcroft Institute Industrial Advisory Committee  
**2007-2011**: Vice-Chair, Chair-elect, Chair and Past-Chair, Division of Physics of Beams, American Physical Society.  
**2008-2012**: Mentor, Queens University Belfast, Northern Ireland (LIBRA project).  
**2008-2009**: Visiting Professor, Harvard University Physics Department  
**20014-present**: Presidential Chair for Research, Scholarship and Artistry, Professor of Physics and Director of Accelerator Research, Northern Illinois University and Distinguished Scientist, Member of Director's Senior Leadership Team, Fermi National Accelerator Laboratory

## MANAGERIAL and PROJECT EXPERIENCE:

- 1987-1992: Group Leader for the Exploratory Studies Group, LBL and chief physicist supervising the accelerator physics team for the Advanced Light Source. Led a group of 14 Ph.D. scientists in:  
(i) the conception, design, construction, commissioning and operation of the Advanced Light Source;  
(ii) novel FEL studies; (iii) the Superconducting Super Collider (SSC) design; and (iv) the California B-factory initiative. **Major Projects:** Advanced Light Source (ALS, Berkeley) and PEP-II (SLAC).
- 1988-1992: Led a California Coalition involving LBNL, SLAC, LLNL, Caltech, Indiana University, various University of California campuses (Berkeley, San Diego, Santa Cruz, Los Angeles, Santa Barbara, Davis) and Stanford University towards the first Scientific and Technical Conception and Feasibility Study of an asymmetric energy high luminosity B-factory at PEP. **Major Project:** PEP-II (SLAC)
- 1992-2001: Founder and Director, Center for Beam Physics. Scientific direction, leadership and administrative management of a multi-disciplinary research program involving 50 Ph.D. scientists, engineers, technical/administrative personnel, students, visitors and four state-of-the-art scientific laboratories where the technologies of lasers, plasmas, microwaves and particle beams converge on forefront scientific research programs. Founded the I'OASIS laboratory for laser-plasma investigations. **Major Project:** PEP-II LER (LBNL/SLAC)
- 1999-2001: Divisional Deputy in the LBNL General Sciences Directorate overseeing Strategy, New Initiatives and Program Development in accelerator-based facilities.
- 2001-2007: Associate Director, Thomas Jefferson National Accelerator Facility. Scientific direction, leadership, administrative and fiscal management of a multidisciplinary research, development, and facilities operations program involving an annual budget of \$70M and a staff of 450 scientists, engineers, technical/administrative personnel, students, visitors, and state of the art laboratories (where lasers, microwaves, particle beams, plasmas, and superconductivity converge on forefront scientific research programs) and two major accelerators: Continuous Electron Beam Accelerator Facility (CEBAF) and the Jefferson Lab Free Electron Laser (FEL). **Major Projects:** SNS (Superconducting 1 GeV Proton Linac cryomodules at JLab), 12 GeV CEBAF Upgrade, JLab FEL and ILC SRF cryomodules.
- 2007-2014 : Director, Cockcroft Institute, UK. Scientific direction, leadership, administrative and fiscal management and integration of a multidisciplinary research, development, facilities operations, knowledge exchange and technology transfer program establishing an international model of integration of academia, national laboratories and industry under one organization (with a staff of 120 FTEs of scientists, engineers, technical/administrative personnel, post-docs, visitors, students and distinguished visiting affiliates, four state-of-the-art Vacuum, Radio-frequency, Microwave Superconductivity and Advanced Laser Laboratories and operating electron-beam accelerator facilities, ALICE and VELA). Responsible for national deliverables to international accelerator projects, education and training of next-generation scientists and engineers, advancing the frontier of accelerator science and technology and creation of knowledge-based economic wealth for the community. **Major Projects:** HI-LUMI LHC, CLIC, ELENA and FCC (CERN), NLS (UK).
- 2014 - Present: Director's Senior Management Team, Fermi National Accelerator Laboratory and Director of Accelerator Research, Northern Illinois University. Principal Investigator DOE, NSF and Fermilab LDRD grants and NIU-FNAL CRADA on joint accelerator R&D.
- Projects: Advanced Light Source (Berkeley), PEP-II (SLAC-Berkeley-Livermore), CEBAF, 12-GeV Upgrade, SNS (Jefferson Lab), Hi-Lumi LHC (EU FP-7), ELENA (CERN), ALPHA (CERN), AWAKE (CERN), FCC (CERN), PIP-II (FNAL), FAST/IOTA (FNAL), g-2 (FNAL), ADMX (FNAL/UW Seattle).

## TEACHING EXPERIENCE:

- 1972-1974: Teaching Assistant at Department of Physics, University of Oregon, Eugene, Oregon.
- 1974-1976: Teaching Assistant for Physics 5 and 6 series (for scientists, engineers, premedical students and general training) in the Dept. of Physics at Univ. of California at Berkeley, including laboratory teaching.
- 1976-1977: Reader of graduate courses Physics 205 (Analytical Dynamics) and Physics 227 (Particle and Field Theory) in the Dept. of Physics at Univ. of California at Berkeley.
- 1978-1980: Expositor and demonstrator of scientific concepts and experiments at the Lawrence Hall of Science, Univ. of California at Berkeley.
- 1987-1988: Taught a formal graduate course at the highest level in physics (Physics 250) titled "Accelerator Physics," in the Dept. of Physics, Univ. of California at Berkeley in the Fall semester of the academic year 1987-1988 (August-December, 1987).
- 1991: Taught a formal graduate course titled "Introduction to Accelerator Physics" in the Dept. of Physics at University of Illinois at Urbana-Champaign as part of the US Particle Accelerator School (June 1 - June 15, 1991).
- 1998-1999: Physics 211 and 212: Statistical Physics - graduate level. Equilibrium and Nonequilibrium (Classical and Quantum) Statistical Physics. Fall 1997 and Spring 1998, UC Berkeley, Physics Department.
- 1998-1999: Michigan State University sponsored web-based lectures for the VU Beam class in 1998 and 1999.
- 1999: Invited lecturer at the Autumn College in Plasma Physics organized by the Abdus Salam ICTP in Trieste, Italy, October and November 1999.
- 1999-2000: Physics 290E: Collider Physics – graduate level, jointly with UC Berkeley Physics Department and LBNL.
- 2001-2002: Initiated Jefferson Lab seminars in CASA (Center for Advanced Studies of Accelerators) and ISRFST (Institute of Superconducting Radio Frequency Science and Technology) and Academic and Professional Training Courses.
- 2004 - 2006: Graduate course in Accelerator Physics, Department of Physics, University of Virginia at Charlottesville.
- 2009 - 2014: Various Cockcroft Institute PhD Accelerator Physics Courses, open to Univ. of Liverpool, Manchester, Lancaster and UK students for credit and web-cast internationally.
- 2015 – 2016: Physics 790 F, NIU: Special topics in Physics: “Nonlinear Dynamics; Fundamentals of Acceleration and Radiation”.
- 2018 Spring: Physics 652, Honors Astrophysics (planned)

## RESEARCH SUPERVISION/MENTORSHIP:

### *Students: Graduate and Undergraduate*

Ken Lamon, Ph.D, UC Berkeley – 1993-1996, “Isochronous Ring FEL”  
David Friedberg, 1998 – 2000, CSEE Fellow Student Scholar and US/DOE Energy Research Undergraduate Laboratory Fellow: educational web-page “World of Beams”  
Lauren Ostrofsky, 1998, CSEE Fellow Student Scholar and US/DOE Energy Research Undergraduate Laboratory Fellow: educational web-page “World of Beams”  
Kang-Zhu Guo, 1996 – 1999, Ph.D., student, Peking University, “Laser-plasma Physics”  
Nok Tsao, UC Berkeley, Physics, 2000, “THz R&D”  
Mei Phing, UC Berkeley, Physics, 2000, “Particle Dynamics in Laser Fields”  
Baiju Bhatt, Commonwealth of Virginia Governor’s School student and mentee, 2001-2002, “Synchrotron light”-Virginia Junior Science Academy and Caltech Signature awardee  
Ehman Ahmed, Old Dominion University, 2005, “Far Optical Resonance Trapping at JLab FEL”  
Gambhir Ranjit, Old Dominion University, 2005, “Higher Harmonic Generation via FELs”  
Mrinalini Dey, pre-college intern as an incoming Univ. of Cambridge Pre-Med student, 2009-2010  
Nicholas Mason: Summer student from Lancaster, “Laboratory Experiments on Dark Matter”, 2011  
Andrew Boreham, summer student from Durham, “Laboratory Experiments on Dark Energy”, 2011  
Ben Spencer, Manchester, 2008 -2011, PhD student: “Study of MEG Structures for Photovoltaics”.  
Oliver Burrow, Liverpool, 2011-2014, PhD student: “Dark Energy Atom Interferometer”  
Deepa Angal-Kalinin, Liverpool, 2009- 2014, PhD student: “Coherent Synchrotron Radiation”  
Frederic Blampuy, NIU, 2015, beginning PhD, independent research.  
Sebastian Szutowski, NIU 2016 - present, Ph. D. student.  
Jeremiah Mitchell, NIU, 2016 -0 present, Ph. D. student  
Harsha Panagutti, NIU, 2016, independent research.

### *Post Doctoral and Visiting Scientists*

Dr. Ben Freemire, 2016- - present, Post-doc on DOE grant.  
Dr. Jeffrey Eldred, 2016-: LDRD Post-doc at FNAL, jointly supervised.  
Dr. Matthew Harvey, 2011- 2014: PDRA in Manchester PSI: “ultra-cold electrons”  
Dr. Graeme Burt, 2007-2008, Mentee and Post-doctoral scientist, Lancaster University, UK.  
Ms. Gui Mei, 2005-2007, Mentee and Visiting Reseracher/Ph.D.student, Peking University/JLab.  
Dr. Stefan Simrock, 2003-2004, Visiting Scientist, DESY, Germany  
Dr. Jacek Sekutowicz, 2001-2004, Visiting Scientist, DESY, Germany  
Dr. Subal Kar, 1999 – 2000, Visiting Fulbright Scholar, India  
Professor Toshiki Tajima, 1998, Visiting Researcher, UT Austin  
Dr. Etienne Forest, 1998, Visiting Researcher, KEK, Japan  
Ms. Shakti Kosta, 1998 – 1999, Visiting Researcher/Ph.D. student, India  
Dr. Ranjan Ray, 1998 – 1999, Visiting Fulbright Scholar, India  
Dr. Martin Berz, 1988 – 1992, post-doctoral scientist  
Dr. Werner Joho, 1991 – 1992, Visiting Scientist from Paul Scherer Institute, Switzerland  
Dr. Malika Meddahi 1991 – 1994, post-doctoral scientist  
Dr. Roland Savoy, 1988 – 1989, post-doctoral scientist  
Dr. Ming Xie, 1988 – 1990, post-doctoral scientist  
Dr. Johan Bengtsson, 1989 – 1990, post-doctoral scientist  
Dr. Jeffrey Tennyson, 1989 – 1990, visiting scientist from UC Berkeley  
Dr. David Robin, 1992, post-doctoral scientist  
Dr. John Edighoffer, 1992 – 1993, visiting scientist from IBM  
Dr. Manoel Conde, 1992 – 1994, post-doctoral scientist  
Dr. Wim Leemans, 1992 – 1994, post-doctoral scientist  
Dr. Dominique Gardent, 1993 – 1994, post-doctoral scientist

## RESEARCH COLLABORATIONS:

*Scientific Member of:*

1.  $G^0$ –experiment in Hall C at CEBAF in JLab. 2005-2009.
2. ALPHA Experiment on Anti-Matter at CERN, 2011- present;
3. Proton-wakefield experiment, “AWAKE” at CERN, 2011-present;
4. “g-2” Experiment at Fermilab, 2014 –present;
5. “DUNE” experiment at Fermilab, 2014-present;
6. ADMX experiment (cavity-search for axions) (invited): 2015 - present.
7. FCC-collaboration, CERN, 2014-present
8. MAGIS-100 collaboration with Stanford University (proposed).

## GRANTS:

1. PI: DOE-HEP GARD (General Accelerator R&D) program: \$400 k (2016-2018)
2. PI: NSF Advanced Accelerator Science R&D: \$590 k (2015-2018)
3. PI: Fermilab LDRD: \$ 1,200 k (FY 2015-2018)
4. PI: STFC (UK) Cockcroft Institute grant: 16.3 M British Pounds (2009-2017)
5. PI: STFC (UK) Cockcroft Institute PhD studentship Award: 200,000 British Pounds/year, 2009-2014.
6. PI: DOE-NP FWP Jefferson Lab Accelerator Operations and R&D: \$33M/year, 2001-2007
7. PI: DOE-HEP FWP Lawrence Berkeley National Laboratory, Center for Beam Physics Advanced Accelerator R&D, \$5m/year rising to \$10 M/year, 1992 – 2001.
8. PI: LBNL LDRD 1987 – 2001 (various advanced projects on infrared free electron lasers, asymmetric particle colliders, femtosecond x-ray sources, laser-plasma wakefield acceleration).

## COMMITTEES:

Consultant, Sincrotrone Trieste (President: Carlo Rubbia), 1987.

DOE Technical Review Committees: Argonne National Laboratory’s High Energy Physics (HEP) Program, 1990; HEP review of Brookhaven National Laboratory’s Accelerator Test Facility (ATF), 1991; HEP review of UCLA Plasma Beat-wave Accelerator Program, 1991.

Director’s Technical Review Committee: Fermilab Main Injector Upgrade, 1989.

Director’s Technical Advisory Committee for PEP-II B-factory: SLAC, 1992-1996.

Director’s Technical Review Committee: SLAC Next Linear Collider, 1996, 1998.

International Study Group (ISG) on Linear Colliders: 1992-2000.

Director’s Panel to Explore New Directions (PEND): LBL, 1987-’89.

Director’s Committee on Laboratory Organization and Staff Reclassification: LBL, 1991.

Director’s Task Force on Core Competencies: LBL, 1992.

Divisional Staff Committee: LBNL Accelerator and Fusion Research Division, 1996-2001.

Program Committee, US Particle Accelerator Conference: 1989, ‘93, ‘95, ‘97.

Organizing Committee, US Particle Accelerator Conference: 1999, 2001, 2003, 2005, 2007 and 2009.

International Advisory Board/Program Committee, International Linac Conference: 1990, '92, '94, '96, 2006, '08, '10.

International Advisory Committee: European Particle Accelerator Conference, 1996, '98, '00, 2008; Computational Accelerator Physics Symposium, Darmstadt, Germany, 2000, University of Michigan, East Lansing 2002. Program Committee: ICFA Advanced Accelerator Workshop, BNL, 1992; Fifth Joint US-CERN Particle Accelerator School held in Benalmadena, Spain, 1992; APS Spring Meeting, 1992, 1997, 2000.

ICFA/LBNL Spokesperson: 1986-1998.

LEADER and CO-CHAIR, Group 1, "Non-Conventional Colliders and Luminosity Paradigm", AAC'98, July 5-10, 1998, Baltimore, Maryland.

Program Committee on New Directions in Laser-Beam Interactions, held in Tokyo Metropolitan University, Summer, 1999.

Conference Chairs: Advanced Accelerator Concepts, Granlibakken, Lake Tahoe, 1996; International Neutrino Factory Workshop, NuFact'00, Monterey, CA. 2000.

Organizing Committee: ICFA Workshops in Arcidosso, Italy on Nonlinear Dynamics, Beam Physics and FELs, 1994, 1996, 1998, 2000.

Snowmass '96 – Chair, Advanced Concepts Division.

Member, LBNL Diversity Committee, 1998 – 2000.

Member, LBNL Awards Committee, 1998 – 2000.

Chair, Working Group on LBNL General Sciences Diversity Plan, 2000.

Reviewer of UC-system wide Proposals for Research based on LLNL Laser Systems, 1997.

Reviewer of Proposals from the Third World Academy of Sciences, 1995, 1998.

Member: APS/DPB Executive Committee, 1997 – 2000.

Chair: APS/DPB Education Committee, 2000.

Chair: APS/DPB Fellowship Committee, 2002-2003.

Advisory and Program Committee: Advanced Accelerator Concepts Workshop, 1994, 1996, 1998, 2000; Quantum Aspects of Beam Physics (QABP'99 and '00) Workshops, Monterey, California, 1999 and Capri, Italy, 2000.

Director's Advisory Committee on Run-II Luminosity Program, Fermi National Accelerator Laboratory, 2002.

Director's Advisory Committee on the National Synchrotron Light Sources (NSLS), Brookhaven National Laboratory (BNL) 2002-2003.

USPAS Accelerator Physics Prize Committee 2002-2003.

Technical Representative to the Department of Energy's BESAC Special Review Panel on the 20 Year Facilities Plan, 2003.

Member: Governor's Advisory Committee on the Virginia Biotechnology Initiative, Commonwealth of Virginia, 2003, 2004.

Scientific Reviewer, Variable Energy Cyclotron Center and Radioactive Ion Beam Facility, Kolkata, India,

2004-.

Chair: Scientific Program Committee, 2005 Particle Accelerator Conference.

Member: Scientific Program Committee, 2006 European Particle Accelerator Conference

Member: Scientific Program Committee, 2007 Asian particle Accelerator Conference

Member: International Advisory Committee, IPAC (International Particle Accelerator Conference), 2010-onwards;

Founding Member: Indo-US Collaboration on Accelerator Science and Technology, 2006 - present

Member: TESLA Technology Collaboration Board, 2005-2007

Member: 2005 – 2007; Accelerator Test Facility (ATF) Program Advisory Committee, Brookhaven National Laboratory

Member: 2005 – 2010; Acceleratory Advisory Committee (AAC), Fermi National Accelerator Laboratory

Member: 2008-2013; DESY Scientific Council (SC)

Member: 2005 – 2007; Accelerator Science Technical Advisory Board (ASTAB) of CCLRC, UK

Member, 2010-2014: Accelerator Strategy Board, STFC, UK

Member and Chair of Sub-panel, Turkish Accelerator Centre (TAC), 2010 - present

Vice-Chair, Chair- Elect, Chair and Past-chair, American Physical Society/Division of Physics of Beams, 2007-2011

Member. International Advisory Committee, ANURIB Project and VECC, Government of India, 2009 – present

International Mentor (invited), DST INSPIRE program, January, 2016, Punjab University, INDIA

Member: 2016- present: IUPAP (International Union of Pure and Applied Physics) Topical Group on Accelerator Science

Co-Chair, DOE Round Table on “Quantum Sensors at the Intersection of Fundamental Science, Quantum Information Science and Computing”, February 25, 2016, Bethesda, Maryland

Student Scholarship Committee, 2016, NAPAC 2016 (North American Particle Accelerator Conference)

Member, NIU Department of Physics “Grade Conflict Resolution” committee, 2026-2017

Member, International Collaboration Board, CERN-FCC, 2014-present.

## MAJOR ACCOMPLISHMENTS:

- Major contributions during 1982 – 1984, as a member of the group implementing **Stochastic Phase-space Cooling** in the colliding ring complex at CERN, Geneva, Switzerland where the W and Z Bosons were discovered during this period;
- Conceptual, theoretical, experimental and technological development of “**Bunched Beam Stochastic Cooling**” of protons, anti-protons and ions during 1978 till 1985, initial one-channel application at the SPS, and final validation in the recent implementation at the RHIC collider at the Brookhaven National laboratory (BNL);



- Led and supervised the team of accelerator physicists that conceived, designed and commissioned the **Advanced Light Source (ALS)** storage ring synchrotron radiation source at Berkeley Lab, 1987-1992;
- Laid the accelerator physics foundation and established the technical feasibility of the **Asymmetric Energy Electron-Positron Collider (PEP-II)** for CP violation studies at Stanford Linear Accelerator Center, Stanford University, 1989-1998, via initial concepts and leadership role in its design;
- Pioneered femto-techniques and co-principal investigator of the team that produced world's first **Femtosecond X-ray and Electron Bursts** for studies of Ultrafast Processes, 1996 and 1999: October 11, 1996 (p. 236) and March 24, 2000 (p. 2237) issue of *Science*;
- Founder/Director, **Center for Beam Physics @ Lawrence Berkeley National Laboratory** of Univ. of California, 1991-2001 (a staff of 50 scientists, engineers and administrative personnel), including creation of the **Lambertson Beam Electrodynamics Laboratory and the P'OASIS Laboratory**;
- Founder of two Centers of Excellence at Jefferson Lab in 2001: **Center for Advanced Studies of Accelerators (CASA)** and **Institute for Superconducting Radio Frequency Science and Technology (ISRFSST)**;
- Construction and commissioning of the **1 GeV Superconducting linac for SNS** at Oakridge;
- Established **Energy Recovering Linac research** as a strategic program at Jefferson Lab;
- Achieved **full recovery of the CEBAF** accelerator complex after the **2003 Hurricane Isabel**;
- Led the JLab team achieving **Superconducting RF performance at the BCS Limit of Niobium, 2005**;
- **Energy Recovery and IRFEL lasing in ALICE** at the **Cockcroft Institute at Daresbury, UK in 2008**;
- **Commissioning and operation of world's first non-scaling electron Fixed Field Alternating Gradient (FFAG) synchrotron, EMMA**;
- **Development of Type-III solar cells at ALICE**;
- Development of "**Anti-proton Catching Trap**" for anti-matter experiment ALPHA at CERN;
- **First imaging of oesophageal cancer cells via SNOM at the ALICE IRFEL.**
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#### AWARDS and HONORS:

- (i) **Fellow**, American Physical Society (APS), awarded 1994, USA
- (ii) **Fellow**, American Association for the Advancement of Science (AAAS), awarded 2005, USA
- (iii) **Fellow**, Institute of Physics (IoP), awarded 2006, UK
- (iv) **FRSA: Fellow of the Royal Society of Arts**, awarded 2011, UK
- (v) **President's Professor of Research, Scholarship and Artistry**, Northern Illinois University, 2016
- (vi) **Oxford University MPLS Public Colloquium**, June 2015, June 2016, May 2017
- (vii) **Meghnad Saha Memorial Lectureship**, 2007, Saha Institute of Nuclear Physics, Kolkata, India.
- (viii) **Raja Ramanna Inaugural Lectureship**, 2005, VECC, DAE, India
- (ix) **Halbach Prize**, 1996, LBL, USA (team award) for "*production of femto-second x-rays*"
- (x) **Certificate of Distinction for Mentorship in Energy Research Undergraduate Laboratory Fellowship (ERULF) Program**, Award by US Department of Energy, 1998
- (xi) **Mentorship Certificate**, *New Horizons Governor's School for Science and Technology, Virginia, 2002*
- (xii) **Certificate of Merit** for Technology Transfer, LBNL, 1991
- (xiii) JAERI (Japan Atomic Energy Research Institute), **Distinguished Visiting Scientist**, Japan, 1995
- (xiv) **National Scholar**, 1967, Govt. of India
- (xv) **National Science Talent Scholar**, 1967-69, Govt. of India
- (xvi) **2000 Outstanding Scientists of the Twentieth Century Award** by the International Biographical Center, Cambridge, England, 2000, for "*Outstanding Contributions in Particle Physics, Beams and Femtoscience*"
- (xvii) **John Adams Institute Inaugural Lecture**, 2004, Oxford University, UK
- (xviii) **Sir John Cockcroft Chair of Physics Inaugural Lecture**, 2008, University of Liverpool
- (xix) **Homi J. Bhabha Centenary Keynote Speaker**, 2010, Department of Atomic Energy, Govt. of India
- (xx) **Cavendish Society Lecture**, 2010, Cavendish Laboratory, University of Cambridge
- (xxi) **Fellow**, CP-STIO 2007-2012, Govt. of India

## MEMBERSHIPS AND AFFILIATIONS:

**Member:** American Physical Society (APS), Institute of Physics (IoP), American Association for the Advancement of Science (AAAS); Institute of Directors (IoD, UK), Royal Society for the encouragement of Arts, Manufacturing and Commerce (RSA, UK), International Committee on Future Accelerators (ICFA) Beam Dynamics Panel; American Chapter of the Indian Physics Association (ACIPA); **Executive Board Member** of the **Division of Physics of Beams of APS/USA, 200-2003; Vice-Chair, Chair-elect and Chair: APS Division of Physics of Beams, 2007-2009; Advisory Board** Member to International Particle Accelerator Conference (IPAC), **International Linac Conferences**, Particle Accelerator Conferences (PAC) and European Particle Accelerator Conferences (EPAC); **Reviewer and Referee** for: **Phys. Rev., Phys. Rev. Lett., NIMPR-A** and various **DOE, NSF** and University-Laboratory Research Proposals; **Editor-in-Chief**, Western Hemisphere, of the international journal *Particle Accelerators*, 1992-2000; **Series Editor**, “The Physics and Technology of Particle and Photon Beams”, monograph series by Harwood Academic Publishers, 1993-2001; **Editor**, Physical Review Special Topics -- Accelerator and Beams (PRST--AB), January 2003—2005; **International Board of Editors**, Reviews of Accelerator Science and Technology (RAST), World Scientific Publishers(2008 - ).  
Member: 2016- present: **IUPAP** (International Union of Pure and Applied Physics) Topical Group on Accelerator Science

## RESEARCH INTERESTS:

Beam physics and accelerator technology; synchrotron radiation; free electron lasers; laser-beam-plasma physics; nonlinear dynamics; collider physics; novel concepts in accelerators and radiation sources; ultra-fast processes; biomolecular imaging, quantum optics and quantum computers; classical and quantum statistical physics and many-body problems; particle physics and cosmology; laboratory search for “dark matter” and “dark energy”.

## INTERNATIONAL PROFILE:

Contributed to establishing accelerator science and technology in South Korea, Peoples Republic of China, Taiwan and India via mentorship and transfer of scientists. Contributed to the development of the third generation synchrotron radiation sources world-wide (SLS in Switzerland, Sincrotrone Trieste in Italy, Pohang Light Source in South Korea, SRRC in Taipei, Taiwan and INDUS I & II in the Center for Advanced Technology in Indore, India) via direct involvement in their conception and design, training of scientists, participation in strategic decisions and prolonged visits. Active member of the Forum on International Physics and Forum on Physics and Society of APS. As an appointed CP-STIO Fellow (Collaborative Program with Scientists and Technologists of Indian Origin), Prof. Chattopadhyay plans to keep in contact with colleagues at the India-based Neutrino Observatory (INO) and as well as in the DUNE collaboration at Fermilab. Recently, he has been advising the Turkish Accelerator Centre for synchrotron radiation, FEL and collider developments.

### *Development of Beam Physics and Accelerator Technology Base in ASIA*

While Dr. Swapan Chattopadhyay was responsible for supervising the design, construction and commissioning of the Advanced Light Source at Berkeley, and for leading and directing the Exploratory Studies Group (now grown into the Center for Beam Physics) at LBNL, he hosted and looked after the professional training and development of various scientists from South Korea, People’s Republic of China, Taiwan, India and Japan. These scientists later returned to their respective home countries and today they are significant founders and contributors to major accelerators and accelerator start-ups all over ASIA (they are listed later).

Dr. Chattopadhyay was personally involved in some design decisions and strategies for the design of the Pohang Light Source (PLS) in Korea, the SRRC in Taiwan, INDUS I and II in India.

Dr. Chattopadhyay was responsible for the exchange of information on the design of the Shanghai Light Source and the Beijing Tau-Charm Factory via exchange of scientists on beam dynamics and radiofrequency work.

As the Editor-in-Chief (Western Hemisphere) of the international journal Particle Accelerators, Dr. Chattopadhyay had placed a significant scientific leader from Asia, Prof. Y. Kimura of KEK, Japan as the Editor-in-Chief of the Far East by suggestions to Prof. Eberhard Keil, the Executive Director. He also placed Prof. Dr. Namkung of the POSTECH and PLS (Korea), on the Editorial Board in the Far Eastern section of this visible international journal, with consent from Prof. Y. Kimura of KEK.

Dr. Chattopadhyay was the invited JAERI Distinguished Scientist in 1995 and initiated the research on the Optical manipulation of Beams at the JAERI-RIKEN Spring-8 facility and the newly formed Laser Laboratory in Nara, Japan. Contributed to various Japanese collider projects (JLC, KEK-B) via exchange of personnel.

Prof. Chattopadhyay advised leaders and directors of various institutions (Dir. Iizumi of JAERI (Japan), Dir. Kamitsubo of Spring-8 (Japan), Dr. Richard Sah of SRRC (Taiwan), Dr. Namkung of PLS (Korea), Dr. Bhawalkar of CAT (India) and Dr. B. Sinha of VECC in Calcutta (India)) on various accelerator projects.

***Mentoring and hosting scientists from developing countries including Japan & Former Soviet Union.***

Mentorship of scientists and students from South, South-East and Far -East Asia via (i) personal tutelage, (ii) training under the Center for Beam Physics and under the Accelerator/Engineering Group and (iii) placement in the most forward-looking developing and emerging technological institutions across Asia.

**SOUTH KOREA:**

**Dr. In-Soo Ko**, Ph.D. (UCLA, 1986): Theoretical Plasma Physics. At Berkeley from 1987-1988 training under and contributing to the design of the Advanced Light Source at LBNL and simultaneously to the PLS in South Korea. At PLS, was responsible for the Beam Dynamics investigations and was the designated Deputy Director for the LINAC and Injection Systems. Present Position: Faculty at POSTECH and PLS.

**Dr. Yang-Mo Koo**, Ph.D. (Northwestern U.): Solid State Physics. At Berkeley from 1987-88 designing magnets for the ALS and the PLS under training. Present Position: Deputy Director, PLS.

**Dr. Jeong Sik Choi**, Ph.D. At Berkeley from 1990-1991 training in FEL theory. Present Position: In South Korea, unknown institution.

**Dr. Sang June Hahn**, Ph.D. At Berkeley 1993-1994 training in FEL theory. Present Position: Professor, Jung-Ang University; Leader, FEL Theory. Started FEL Group there.

**Dr. Soo-Il Kwon**, Ph.D. At Berkeley 1992-1993 training in beam physics and FEL theory. Present position: in South Korea, unknown institution.

**Dr. Kun Quan Sun**, Ph.D. At Berkeley in 1995 training in beam physics. Present Position: In South Korea, unknown institution.

**Dr. Eun Sun Kim**, Ph.D. (KEK): Beam Dynamics in Storage Rings. At Berkeley from 1998-2000 studying colliders, instabilities and muons storage rings for US and Japanese high energy physics projects. Training in storage ring physics. Present Position: Scientist at PLS (fixed the coupled bunch motion upon arrival there within a short time).

**JAPAN**

**Dr. Yong Ho Chin**, Ph.D. (KEK), Accelerator Theorist. At Berkeley 1987 till 1994 contributing to B-factory, 3-D FEL theory, Beam-Beam Interaction and general accelerator physics. Was instrumental back at KEK in Japan for the start of the B-factory in Japan and the formation of the general Asian Particle Accelerator activity. Present Position: Professor, KEK, Japan.

**Dr. Hiromi Okamoto**, Ph.D. At Berkeley from 1992-1993 studying crystalline beams and FELs. Present Position: Professor, Kyoto University, responsible for starting the Beam Physics activity at Kyoto Univ.

**Dr. Y. Kishimoto**, Ph.D. (Plasma Physics). At Berkeley in 1996-1997 collaborating on Optical manipulation of Beams and Optical Stochastic Beam Cooling. Present Position: Staff Scientist, JAERI, Naka-Tokai-Mura, Japan.

**Dr. J. Koga**, Ph.D. Plasma Physics. At Berkeley in 1996-1997 collaborating on Optical manipulation of Beams and Optical Stochastic Cooling. Present Position: Staff Scientist, JAERI.

**Mr. Y. Watanabe**, Ph.D. student at U. of Tokyo with Prof. Uesaka. At Berkeley from 1998-1999, training in fluctuation theoretic beam diagnostics. Present Position: Doctoral Research at U. of Tokyo. Helped develop further Prof. Uesaka's Quantum Beam Femto-laboratory.

**Dr. Tomomi Ohgaki**, Ph.D. (Kyoto Univ.). At Berkeley from 1998-2000 training in electron-positron-gamma collisions. Present Position: Kyoto University.

#### PEOPLE'S REPUBLIC OF CHINA

**Changbiao Wang**, at Berkeley, 1991-1993. Trained in two-beam accelerators, FELs, beam dynamics and RF. Present position: being trained further at Yale University.

**Wenfu Du**, at Berkeley 1994-1995. Present Position: Unknown.

**Yaolin Sun**, at Berkeley 1994-1995. Present Position: unknown.

**Kangzhu Guo**, at Berkeley 1996-1999, on formal exchange program from IHEP, China on Sino-US collaboration. Graduate works at our Center while a doctoral student at IHEP. Present Position: further training as graduate student at Rutgers University.

**Gui Mei**, at Jefferson Lab, 2006-2009, studying SRF, ERL and SC IR FELs. Now at BNL.

#### TAIWAN

**Dr. Wen-Hao Cheng**, Ph.D. (Univ. of Maryland), at Berkeley 1995-1997, studying Beam Dynamics, Instabilities in Colliders. Present Position: Industry.

#### INDIA

**Dr. Govindan Rangarajan**, Ph.D. (Univ. of Maryland): Nonlinear Dynamics. At Berkeley from 1990-1992 and 1995 working on FELs, nonlinear moment maps, etc.. Present Position: Professor, Indian Institute of Science at Bangalore. Responsible for starting the Beam Physics Program there.

**Dr. Srinivas Krishnagopal**, Ph.D. (Cornell University): Accelerator Physics. At Berkeley from 1990-1992 and 1999 working on FELs and Beam-Beam Effects in colliders. Present Position: Scientist and Project Leader, Center for Advanced Technology, Indore, India. Responsible for initiating the infrared FEL project there.

**Dr. Vinod Krishnan**, Ph.D. Plasma Astrophysicist. At Berkeley in 1993-1994. Present Position: Indian Institute of Astrophysics, Bangalore.

**Ms. Shakti Kosta**, Doctoral Student from CAT, India. At Berkeley from 1998-1999 working on thesis topic on Beam Electrodynamics of RF cavities. Present Position: In India, institution unknown.

**Dr. Ranjan Ray**, Ph.D. (U. of Oregon): Solid State Physics. At Berkeley in 1998 as Fulbright Scholar training in Beam Physics. Present Position: Professor in St. Xavier's College, Calcutta University. Responsible for starting the interdisciplinary course on beams.

**Dr. Subal Kar**, Ph.D. (Calcutta University): Radio-physicist. At Berkeley from 1999-2000 working on Beam Electrodynamics of RF cavities. Present Position: Associate Professor, Calcutta University. Responsible for initiating RF research there.

**Dr. Vasim Khan**, Ph.D. (University of Manchester): Radio- frequency engineer/physicist. At Cockcroft Institute from 2008-2011 working on Beam Electrodynamics of RF cavities. Present Position: CERN

**International Mentor, INSPIRE Program, Department of Science and Technology, Government of India, 2016** held at Panjab University, Chandigarh January 2016

FORMER SOVIET UNION

**Dr. Irina Dubovskaya**, Ph.D. At Berkeley in 1991 researching Parametric Radiation. Present Position Unknown.

**Mikhail Faigenblat** At Berkeley from 1995-1996. Present Position: Unknown.

**Dr. Adolf Dzergach**, Ph.D.: Beam Physicist at Berkeley in 1998 working on Two-Beam Accelerator. Present Position: Moscow, responsible for starting the two-beam accelerator program there.

REPUBLIC of TURKEY

**Dr. Bora Kosteneglu**, Ph.D. from University of Ankara. At Cockcroft Institute UK in 2010-2011, researching on synchrotron radiation, FELs and colliders. Presently at DESY.

## SELECTED PUBLICATIONS

### Femtosecond X-rays and Electrons

“Generation of Femtosecond X-rays by 90° Thomson Scattering,” (with K.-J. Kim and C. V. Shank), *Nucl. Instrum. Methods in Phys. Res.*, **A341**, 351-354, 1994.

“Femtosecond X-ray Pulses at 0.4 Å by 90° Thomson Scattering: A New Tool for Probing the Structural Dynamics of Materials”, (with R. W. Schoenlein, et. al.), *Science*, **274**, 11 Oct. 1996, p. 236.

“Generation of Femtosecond Pulses of Synchrotron Radiation”, (With R. W. Schoenlein, et. al.), *Science*, March 24, 2000, pp. 2237-2246.

“Inverse Compton backscattering source driven by the multi-10 TW laser installed at Daresbury”, (With G. Priebe et al), *Lasers and Particle Beams* (2008), 26, 649-660, Cambridge University Press.

### Accelerator Applications of Imaging and Spectroscopy for Health and Energy

“Near Field Optical microscopy with an infrared free electron laser applied to cancer diagnostics” (With A. D. Smith, et al), *Applied Physics Letters* **102**,074306 (2013) (<http://dx.doi.org/10.1063/1.4790436>).

“Time-resolved Surface photovoltage measurements at n-type photovoltaic surfaces: Si (111) and ZnO (1010)” (With Ben Spencer, et al), *Phys. Rev. B* vol. 88, p. 195301 (2013)

### Advanced Beam Physics, Accelerators and Storage Rings

“Role of Lasers in Linear Accelerators”, S. Chattopadhyay, August 1996: invited paper at the LINAC '96 and published in its proceedings **CERN 96-07**.

“Laser-Based Sub-Picosecond Electron-Bunch Characterization Using 90° Thomson Scattering,” (with W. P. Leemans, et. al.), *Phys. Rev. Lett.*, **77**, 4182 (1996).

“Interaction of Relativistic Electrons With Ultrashort Laser Pulses: Generation of Femtosecond X-rays and Microprobing of Electron Beams”, (With W. P. Leemans, et. al.), *IEEE Journal of Quantum Electronics*, Vol. 33, No. 11, Nov. 1997, p. 1925.

“Alight a Beam and Beaming Light: A theme with Variations’ ” *Physics of Plasmas*, Vol. 5, Number 5, p. 2081 (1998).

“Photon-Electron Interaction and Condense Beams”, *Quantum Aspects in Beam Physics*, published by World Scientific, 1999, Pisin Chen, et al., Ed.

### Frontier Colliders and Accelerators for Particle and Nuclear Physics

"Physics and Design Issues of Asymmetric Storage Ring Colliders as B-Factories," *Particle Accelerators*, 1990, Vol. 31, pp. 121-133.

“Accelerator Issues and Challenges at the IsoSpin Laboratory,” *Particle Accelerators*, 1994, Vol. 47, No. 3-4, pp. 119-126.

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

"Linear Colliders with Gamma-Gamma Collisions— an Introduction," *Nucl. Instr. and Methods in Physics Research A*, (1995) Vol. 355, Issue 1. (With W.A. Barletta, et. al.).

"Free Electron Lasers for Gamma-Gamma Colliders — A Summary," *Nucl. Instr. and Methods in Physics Research A*, (1995) Vol. 355, Issue 1. (With P. Morton).

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

"Motivation and goals of ERL 2005", Proc. 32<sup>nd</sup> ICFA Advanced Beam Dynamics Workshop on "Energy Recovering Linacs," ERL 2005, *Nucl. Instr. and Meth. in Phys. Res. A* 557 (2006) 3-5

"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)

"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.

"Accelerator Physics Challenges of the Large Hadron Collider", **Indian National Academy of Sciences, Springer Verlag, 2009.**

"A large Hadron-electron Collider (LHeC) in the LHC Tunnel", **EPAC 2009, Genoa, Italy and submitted to IPAC 2010, Kyoto, Japan.**

"Radiative regime of linear colliders, high repetition rate free electron lasers and associated accelerator structures", S. Chattopadhyay and R. M. Jones, *Nucl. Instr. and Meth. A* (2011), doi:10.1016/j.nima.2011.05.072

"Collider design issues based on proton-driven plasma wakefield acceleration", with G. Xia et al., *Nucl. Inst. and Meth. in Phys. Res., A* (2014), pp 173-179

"Path to AWAKE: Evolution of a Concept", **NIMA Proceedings**, 2015 nima\_proceedings.0.3590b9.4d0dd71f

## **Synchrotron Radiation Sources and Free Electron Lasers**

"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, et. al.).

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

"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.).

"An Infrared Free Electron Laser System for the Proposed Chemical Dynamics Research Laboratory at LBL Based on a 500 MHz Superconducting Linac," *Nuc. Instr. and Methods in Physics Research A* 341 (1994) 280-284. (With K.-J. Kim, et al).

## **Stochastic Phase-space Cooling**

"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. 3.

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

(1984).

"Some Fundamental Aspects of Fluctuation and Coherence in Charged Particle Beams in Storage Rings," **AIP Conf. Proc. Series** No. 127, 1985, p. 467.

### **Heavy Ion Fusion Drivers**

"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).

"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).

"Study of the Beam Break-up Mode in Linear Induction Accelerators for 'Heavy Ions,'" Proceedings of the 1981 Particle Accelerator Conference, Washington, D.C., and **IEEE Transactions on Nucl. Sci.**, 1981, Vol. NS-28, No. 3, p. 2465. (With J. J. Bisognano).

### **SPECIAL EDITORSHIPS OF BOOKS, PROCEEDINGS and PERSPECTIVES**

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).

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

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

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

Editor, "Proceedings of the 7<sup>th</sup> Workshop Advanced Accelerator Concepts", Granlibakken, Lake Tahoe, California, October 12-18, 1996, **AIP Conference Proceedings** 398.

Editor, "Nonlinear and Collective Phenomena in Beam physics", Arcidosso, Italy, 1996 and 1998, **AIP Conference Proceedings**, 395 and 468.

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

Editor, 32nd ICFA Advanced Beam Dynamics Workshop on "Energy Recovering Linacs," ERL 2005, (with L. Merminga), Jefferson Lab, March 19-23, 2005, to be published in **Nucl. Instr. and Meth. in Phys. Res. A**

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

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

Editor, **ICFA Beam Dynamics Newsletter, March 2010.**

Editor, "**X-Band Technology**", NIMPR-A, 2011

Author: "**Viewpoint**" **Articles in CERN Courier 2001, 2007 and 2015** on "Mezzo-scale Facilities for Nano- and Bio-sciences", "Superconducting Radiofrequency Accelerator Tested by Hurricane Isabel" and "In search of Hidden Light" in the year of light 2015 (See complete list of publications).

Editor, "**Fermilab at 50**", Ed. Swapan Chattopadhyay and Joseph Lykken, World Scientific, 2017 (to be published)