June 2022

JOHN D. FOX
Applied Physics Department
Stanford University
348 Via Pueblo Mall, Stanford CA 94305

EDUCATION:

Ph.D. Applied Physics, Stanford University, 12/85.
Ph.D. Minor in Electrical Engineering, Stanford University.
  Thesis: "Sensing with High-Frequency Ultrasound in Air." This work involves transducers and systems
  operating in air at .3-10 MHz for rangefinders, imaging microscopes, and surface profile measurements.
M.S. Applied Physics, Stanford University, 3/83.
A.B. Physics, Harvard University, 9/77.

PROFESSIONAL EXPERIENCE:

2009-2018	SLAC Senior Staff Scientist
1990-2008	Group Leader, Feedback and Dynamics Research, Stanford Linear Accelerator Center.
1987-1990	Electrical Engineer, Stanford Linear Accelerator Center
12/86-6/87	Research Staff Member, IBM Almaden Research Center.
1985-1986	Research and Development Engineer, Stanford Photon Research Laboratory
1978-1985	Electrical Engineer, Stanford Linear Accelerator Center
11/75-6/76	Project Engineer, IMSAI, San Leandro, CA

ACADEMIC APPOINTMENTS:

2016-Present	Adjunct Professor, Applied Physics, Stanford University
1999-2016	Consulting Professor, Applied Physics, Stanford University
1993-1999	Consulting Associate Professor, Applied Physics, Stanford University
1991-1993	Acting Assistant Professor, Applied Physics, Stanford University
1989-1991	Lecturer in Applied Physics, Stanford University.
1982-1984	Instructor of Physics, Physics Department, Stanford University.
1976-1977	Teaching Assistant, Physics Department, Harvard University

HONORS and AWARDS:

2008	Fellow, American Physical Society, Physics of Beams
2000	Stanford Dean's Award for Distinguished Teaching

TEACHING:

Stanford University

1990 -2022	Applied Physics 207/208 - Invited by the Stanford Applied Physics department to propose and develop a new two quarter graduate course in *laboratory electronics*. Planned syllabus and lab exercises, developed foundation and corporate donation support for a new student laboratory. Responsible for all class lectures and supervision of two lab teaching assistants.
2001-2022	Applied Physics 79 - Co-developed (with Prof. Ted Geballe) "*Energy Choices for the 21st Century*". This seminar class has been offered as part of the Sophomore and Freshman Undergraduate Seminar program. The course centers on basic physics principles and the science literature to analyze renewable energy technology, and uses a seminar format to explore science, technology and policy options. 6 *students from the class have received the Introductory Seminar Excellence Award for their final papers* (2011,2017,2018,2019, 2020,2021)
2020-2021	Faculty responsible for development of remote lab kits and planning of remote lab instruction for

5 core undergraduate Physics courses for majors and non-majors

2020	Physics 23 – Core Undergraduate course in *Electricity and Magnetism*. Responsible for all lectures, Planned new Lab content and supervised lab teaching assistants
2020 -2021	Physics 104 *Electronics and Introduction to Experimental Methods*
2015–2018	Physics 105 *Intermediate Laboratory*. Taught lectures and supervised 4 teaching assistants in lab exercises. Developed new curricular materials with focus on signal processing for physics instrumentation.
2015	*Applied Physics Short Course on RF Techniques*. Based on Student requests, developed a 5 week lecture/laboratory short course on applications of RF techniques, design and measurement of RF systems. Examples from the science literature, lab exercises to build example RF circuits and strengthen experience and confidence with RF instruments and techniques
1982-1984	Physics 106 *Computer Methods for the Laboratory*. Taught lecture and laboratory sessions. Developed course content and student laboratory exercises with microprocessors.
1976-1977	Physics 123, *Laboratory Electronics*, Harvard University, laboratory instructor.

US Particle Accelerator Schools

2017	"*Introduction to Low Level Radio Frequency Systems, Technology and Applications to Particle Accelerators*", Co-Developed with C. Rivetta and T. Mastorides, an intensive 3 unit (15 lecture hour) course. The class introduces the fundamental physics of beams interacting with Accelerator RF systems, the technology of RF signal processing used to control beams, and presents example applications from circular and linear accelerators. The course includes Matlab based computer control exercises. Class taught at U.C. Davis (January 2017)
2008, 2010	"*Fundamentals of Timing and Synchronization with applications to Accelerators*", Co-Developed with Russel Wilcox (LBL), a 3 unit (15 lecture hour) course on microwave/RF and electro optic/ laser based techniques for measurement and control of fs stable timing and synchronization systems. The class includes hands-on laboratory exercises. Class taught at USPAS January 2010 (UC Santa Cruz) and 2008 (UC Santa Cruz).

2004, 2005   "*RF Engineering and Signal Processing*", a 3 unit (15 lecture hour) course on microwave/RF circuitry and signal processing techniques. The class includes hands-on laboratory exercises as well as computer exercises. Class taught at Cornell University (2005) and William and Mary (2004).

1995, 1997, 2012 "*Control Theory with Applications to Accelerators*", Co-Developed (with H. Hindi), an intensive 3 unit (15 lecture hour) course. The class presents central concepts of modern control theory (including state space representations, feedback, estimation and optimal LQR and LQG control)) and develops example applications for accelerator control problems. The course includes 5 Matlab based computer control exercises. Class taught at Duke University (1995), U.C. Berkeley (1997), MSU (2012 jointly with C. Rivetta)

International Particle Accelerator Schools

2016	*"Understanding Signals From Beams"*, Australian Collaboration for Accelerator Science, School for Accelerator Physics, Australian Light Source, Monash Victoria January 18- 29 2016
2013	*"Beam Instrumentation and Understanding Signals From Beams*", US-CERN-Japan-Russia International school "Introduction to Particle Accelerators", Shuzowa, Japan October 2013
1999	"*Beam Instrumentation and Feedback*", Asian Accelerator School AAS 1999, Huario and Beijing, China 22 November – 4 December 1999

1998   "*Bunch Feedback Systems and Signal Processing*", joint US-CERN-Japan-Russia Particle Accelerator School on Beam Measurement, Montreaux, Switzerland, 11-20 May 1998

RESEARCH

Stanford University Energy Sciences (Stanford and Ford Funding)

2018 – 2021   Co-Pi with Bill Dally (CS) on "Optimal Control Methods for Fuel Efficiency and Battery Health & Longevity for PHEVs", grant awarded through the Ford-Stanford Alliance.

2015 - 2017   Co-PI with Bill Dally (CS) and Stephen Boyd (EE) on a Precourt Energy Efficiency Institute Project "Context-Sensitive Battery Management Strategies for Hybrid Automobiles". Supervision of two graduate students and active research program funded through a Stanford seed grant.

SLAC and International Accelerator Physics and Technology (DOE, CERN, US-Japan and LNF funding)

Accelerator Research areas center on RF systems and beam dynamics, instability control for particle accelerators, technology development for beam instrumentation. Technology development and active measurement programs at facilities in the US, Europe and Asia. Extensive experience with beam feedback systems, digital signal processing techniques, accelerator dynamics and instrumentation for electron/positron and hadron synchrotrons and storage rings, LINAC systems. Experience with High Energy Physics particle detectors and processing systems, Deputy Program Manager for Electronics for the SLD Detector

2019	Participating author and consultant to Jefferson Lab (JLAB) on RF and LLRF issues, beam dynamics studies for their Electron-Ion Collider Conceptual Design Report
2018	Participating author CERN Future Circular Collider study
2011-2017	Group leader for DOE LHC Accelerator Research (LARP) projects in LHC LLRF techniques and feedback control of electron-cloud instabilities in SPS and LHC.
1991 -2008	Group leader for Accelerator Feedback and Instabilities group, development of DSP based instability control methods for us in US, European and Asian accelerator facilities

ADVISING

Research and thesis supervision for Stanford Ph.D. students in Applied Physics and Electrical Engineering, research supervisor for Stanford M.S. Electrical Engineering students.

Postdoctoral Fellow Supervision:

John Cesaratto, SLAC hosted Toohig Fellow 2011 – 2014
- Staff Scientist at Phillips Research

Ph.D. Student supervision:

Ozhan Turgut, Aeronauatics and Astronautics, Stanford University Ph.D. 2019
- "Identification of Intra-bunch Dynamics for Model-Based Beam Instability Control for the CERN Super Proton Synchrotron"
- Research Engineer, Apple Computer

Themis Mastorides, Electrical Engineering Department, Stanford University Ph.D. 2010
- "Radio Frequency Station - Beam Dynamics Interaction in Circular Accelerators"
- Awarded DOE Toohig Fellowship for research at the LHC 2011
- Assistant Professor, Physics Department, California Polytechnic University

Dmitry Teytelman, Electrical Engineering Department, Stanford University, Ph.D. 2003
- "Architectures and Algorithms for Control and Diagnostics of Coupled-Bunch Instabilities in Circular Accelerators"
- Awarded APS Division of Physics of Beams Dissertation Prize 2003
- Owner and Principal Scientist Dimtel (company selling beam instability control systems to accelerator labs)

Shyam Prabhakar, Applied Physics Department, Stanford University, Ph.D. 2001
- "New Diagnostics and Cures For Coupled-Bunch Instabilities"
- Awarded APS Division of Physics of Beams Dissertation Prize 2001
- Professor, Computational and Systems Biology, University of Singapore

Haitham Hindi, Electrical Engineering Department, Stanford University Ph.D. 2000
- "Local Analysis of Perturbed Linear Systems with Application to Saturating Control Systems"
- Principal Engineer Apple Computer

M.S. Student supervision (these students worked in my research group on a research assistantship):

Walid Hosseini	M.S. Electrical Engineering Stanford University
Lianne Beckman	M.S. Electrical Engineering Stanford University
Noam Eisen	M.S. Electrical Engineering Stanford University
Leonid Sapozhnikov	M.S. Electrical Engineering Stanford University
Yubo B. Zhou	M.S. Electrical Engineering Stanford University
Kristen Pollock	M.S. Electrical Engineering Stanford University
Jason Platt	M.S. Applied and Engineering Physics (co-term) Stanford University
Alex Bullitt	M.S. Mechanical Engineering Stanford University

Student Advising and guidance – Pre-major advising for 25 years, enthusiastic and supportive role guiding students for internships, Stanford in Washington, graduate school opportunities. Active participation in VPUE programs on undergraduate engagement and teaching skills. Freshman advisee Sam D'Amico was awarded the Terman prize on graduation, and named me as the most significant Stanford faculty in his undergrad experience. Summer 2017 hosted Stanford undergrad and graduate students resident at CERN (ATLAS group) on a tour of the LHC control room and technical tour of the super proton synchrotron, and over ice cream fostered discussions between undergrads and grad students on graduate school choices and application process.

PROFESSIONAL SERVICE

2019-2022	Faculty Director for the Stanford Precourt Energy Center summer undergraduate research program (SUPER)
2006-2022	Machine Advisory Committee, SuperKEKB Accelerator, KEK Laboratory, Japan
2018	Education and Outreach Committee chair for APS Division of Physics of Beams. Developed proposal for undergraduate colloquia program for outreach to Physics and Engineering departments in US, proposal accepted and travel funds authorized by DPB.
2017	Education and Outreach Committee vice chair for APS Division of Physics of Beams. Developed proposal for undergraduate colloquia program for outreach to Physics and Engineering departments in US.
2017	Stanford Long Range Planning Committee –Served on the "Communication between Natural Sciences and the Public" subcommittee (appointed by K. Moler).
2011 – 2017	Chair, DOE Toohig Fellowship committee. Recruited applicants and led selection process for international Fellowship supporting Postdoctoral research at the LHC under the DOE LHC Accelerator Research Program
2013,2014,2015	Lectures for the Stanford Alumni Association (at Reunions, classes without Quizzes and lectures to Stanford Alumni clubs across the US).

ADDITIONAL INFORMATION and ACTIVITIES:

Place of Birth: Chicago, Illinois.

Among my more useful and unusual credentials are certificates in advanced engine performance, engine repair, engine tune-up, manual transmissions and rear axles, suspensions and steering, electrical systems, and brakes from the National Institute for Automotive Service Excellence (ASE). Avid recreational cyclist for balance.

City Commissioner for the City of Menlo Park 1998 - 2009

(Bicycle, Pedestrian and Alternative Transportation areas) Contributions to Menlo Park city projects include El Camino visioning, development of the city Bike Plan, and Safe Routes to Schools programs.

2009 - present CAC Advisory Committee for the Transportation Authority (San Mateo County)
Committee member with interests in all transportation modalities, particularly pedestrian and bike facilities and inter-modality planning.

Over 300 publications on Google Scholar
https://scholar.google.com/citations?hl=en&user=cI1uVOAAAAAJ

Stanford University profile
https://profiles.stanford.edu/john-fox

BOOK CHAPTERS

Handbook of Accelerator Physics and Engineering, edited by A. Chao, K. Mess, M. Tigner and F. Zimmerman, Chapter 7.2.14 "Feedback to Control Coupled-Bunch Instabilities" , Chapter 7.2.14.1 "Beam Diagnostics via Feedback Signals", and Chapter 7.3.1.2 "Low Level RF", second edition 2013, World Scientific, ISBN 978-981-4415-84-2

RECENT REFEREED PUBLICATIONS:

Beam gap transient analysis and mitigations in high current storage rings for an electron-ion collider, T. Mastoridis, J. D. Fox, J. Guo, et al, Phys.Rev.ST Accel. Beams 23 (2020) 10, 101601

Multiple Input Multiple Output (MIMO) Control of a Novel Three Phase Multilevel Inverter, T. Chen, W. Dally and J. Fox, IEEE COMPEL workshop on Control and Modeling for Power Electronics, Aalbog, Denmark November 2020

Optimal Operation of a Plug-in Hybrid Vehicle with Battery Thermal and Degradation Model, J. Kim, Y. Park, J. D. Fox, S. P. Boyd and W. Dally , 2020 American Control Conference (ACC), Denver, CO, USA, 2020, pp. 3083-3090, doi: 10.23919/ACC45564.2020.9147345.

Optimal Operation of a Plug-In Hybrid Vehicle, J. Platt, N. Moehle, J. D. Fox and W. Dally, IEEE Transactions on Vehicular Technology, vol. 67, no. 11, pp. 10366-10377, Nov. 2018, doi: 10.1109/TVT.2018.2866801.

Equalizer design techniques for dispersive cables with application to the SPS wideband kicker, J. Platt, W. Hofle, K. Pollock and J. Fox, Nucl. Inst. Meth. A 868, 93 (2017) doi:10.1016/j.nima.2017.06.029

Radio frequency noise effects on the CERN Large Hadron Collider beam diffusion, T. Mastorides, et al Phys.Rev.ST Accel. Beams 14:092802 (2011)

RF system models for the CERN large hadron collider with application to longitudinal dynamics
T. Mastorides, et al. Oct. 1, 2010. 12pp. Published in Phys.Rev.ST Accel.Beams 13:102801,2010.

Lessons learned from positron-electron project low level rf and longitudinal feedback.
J. Fox, T. Mastorides, C. Rivetta, D. Van Winkle, (SLAC), D. Teytelman, (Dimtel, Redwood City). May 1, 2010. (Published May 1, 2010). 16pp. Published in Phys.Rev.ST Accel.Beams 13:052802,2010.

Modeling and Simulation of Longitudinal Dynamics for Low Energy Ring - High Energy Ring at the Positron-Electron Project. T. Mastorides , C. Rivetta, J. D. Fox, D. Van Winkle, and D. Teytelman, Phys. Rev. ST Accel. Beams 11, 062802 (2008) [12 pages]

Analysis of longitudinal beam dynamics behavior and rf system operative limits at high-beam currents in storage rings, Claudio Rivetta, T. Mastorides, J.D. Fox, D. Teytelman, D. Van Winkle (SLAC) . SLAC-PUB-12374, Mar 6, 2007. 15pp. Published in Phys.Rev.ST Accel.Beams 10:022801,2007.

"Longitudinal quadrupole instability and control in the Frascati DAFNE electron ring", A. Drago, A. Gallo, A. Ghigo, and M. Zobov, J. D. Fox and D. Teytelman, Phys. Rev. ST Accel. Beams 6, 052801 (2003)

"Characterization Of Longitudinal Impedances in Storage Rings via Multibunch Effects", D. Teytelman, J. Fox, S. Prabhakar (SLAC), J.M. Byrd (LBL, Berkeley & UC, Davis),SLAC-PUB-9106, Jan 2002. 11pp. Published in Phys.Rev.ST Accel.Beams 4:112801,2001

"Curing Coupled-Bunch Instabilities with Uneven Fills", S. Prabhakar, J. Fox and D. Teytelman, Phys. Rev. Lett. 86, No. 10 (2001) 2022-2025

"Commissioning of a higher harmonic RF system for the Advanced Light Source", J. Byrd, S. De Santis, M. Georgsson, G. Stover, J. Fox, D. Teytelman, Nuclr. Inst. Meth. A 455 (2000) 271-282

"Phase Space Tracking of Coupled-Bunch Instabilities", S. Prabhakar, J. D. Fox, D. Teytelman, and A. Young, Phys. Rev. ST Accel. Beams 2,084401 (1999) (online journal http://prst-ab.aps.org/)

"Observation and Modal Analysis of Coupled-Bunch Longitudinal Instabilities via a Digital Feedback Control System," S.Prabhakar, R.Claus, J.Fox, H.Hindi, I.Linscott, J.Olsen, W.Ross, D.Teytelman, Particle Accelerators, 57/3, 1997.

"An Acoustic Resonator Transducer for Operation in Air," J.D. Fox, B. T. Khuri-Yakub, and G. S. Kino, Elect. Lett 21 (16), 694-696 (1 August 1985).

"Acoustic Microscopy in Air at 2 MHz," J. D. Fox, G. S. Kino, and B. T. Khuri-Yakub, Appl. Phys. Lett. 47 (5), 465-467 (1 September 1985).

JOHN D. FOX PUBLICATIONS:

Improved Interface Circuits for CMUT Chemical Sensors, Q. Stedman, J. D. Fox and B.T. Khuri-Yakub, 2019 IEEE International Ultrasonics Symposium (IUS) Glasgow, U.K. 2019 pp. 989-992, doi: 10.1109/ULTSYM.2019.8926206

Transient beam loading and Mitigation in JLEIC Collider Rings, J. Guo, J. Fox, T. Mastoridis, R. Rimmer, H. Wang et al, 10th International Particle Accelerator Conference, MOPRB080, 2019

Recent Results from the Wideband Feedback System Tests at the SPS and Future Plans, K. Li, et al, Proc. 61st ICFA Advanced Beam Dynamics Workshop (HB'18)}, Daejeon, Korea, June 2018 doi:10.18429/JACoW-HB2018-MOP2WA04

Impact of a Wideband Feedback Prototype System on TMCI in the SPS, W. Hofle, et al, Proceedings of the IPAC18 conference doi:10.18429/JACoW-IPAC2018-TUZGBD4

Control of Intra-Bunch Vertical Motion in the SPS with GHz Bandwidth Feedback, J. Fox, et al, Proceedings of the IPAC18 conference doi:10.18429/JACoW-IPAC2018-WEPAL079

Control of Intra-Bunch Vertical Instabilities at the SPS - Measurements and Technology Demonstration, J. Fox, et al, presented at IPAC17 doi:10.18429/JACoW-IPAC2017-TUPIK119

Beam dynamics issues in the FCC, F. Zimmermann, et al, Proc ICFA HB2016 workshop doi:10.18429/JACoW-HB2016-WEAM5X01

Identification of Intra-bunch Transverse Dynamics for Model-Based Control Purposes at CERN Super Proton Synchrotron, O. Turgut, et al, Presented at IPAC16, doi:10.18429/JACoW-IPAC2016-THOAA01

Wideband Vertical Intra-Bunch Feedback at the SPS - Technology Development, Recent Accelerator Measurements and Next Steps, J. Fox, et al, Presented at the IPAC2015 conference, doi:10.18429/JACoW-IBIC2015-WECLA04

Wideband Vertical Intra-Bunch Feedback At The SPS - 2015 Results And Path Forward, C. Rivetta, et al, Presented IPAC2015 paper TUAC2

Modeling and Feedback Design Techniques for Controlling Intra-Bunch Instabilities at CERN SPS Ring, C. Rivetta, et al, Presented at HB2014 paper THO3AB04

First Results and Analysis of the Performance of a 4 GS/s Intra-Bunch Vertical Feedback System at the SPS, J.D. Fox, et al, proceedings of the IPAC13 conference May 2013 SLAC Pub - 15500

A Wideband Slotted Kicker Design for SPS Transverse Intra-Bunch Feedback, J. Cesaratto, et al, proceedings of the IPAC13 conference May 2013 SLAC Pub- 15498

Excitation of Intra-Bunch Vertical Motion in the SPS - Implications for Feedback control of Ecloud and TMCI Instabilties", J. Cesaratto et al, proceedings of the IPAC12 Conference May 2012

Study of Wideband Feedback Kicker for the SPS, S. De Santis, et al Proceedings of the IPAC12 conference May 2012

Analysis of Numerical Noise in Particle-in-Cell Simulations of Single-Bunch Transverse Instabilities and Feedback in the CERN SPS, M. Venturini, et a, Proceedings of the IPAC12 Conference May 2012

Feedback System Design Techniques for Control of Intra-Bunch Instabilities at the SPS, C. Rivetta, et al Proceedings of the IPAC12 conference May 2012

Reduced Mathematical Model of Transverse Intra-Bunch Dynamics, C. Rivetta, et al, Proceedings of the IPAC12 Conference May 2012

A 4 GS/sec. Synchronized Vertical Excitation System for SPS Studies - Steps Toward Wideband Feedback, J. Fox et al Proceedings of the IPAC12 conference May 2012

Simulation Code Implementation to Include Models of a Novel Single-Bunch Instability Feedback System and Intra- beam Scattering, M. Pivi, et al, proceedings of the IPAC12 Conference May 2012

Studies of RF Noise Induced Bunch Lengthening in the LHC, T. Mastorides et. al., Presented at the Particle Accelerator Conference (PAC11),NY,NY May 2011

Mathematical Models of Feedback Systems for Control of Intra-Bunch Instabilities Driven by E-clouds and TMCI, C. Rivetta, et. al., Presented at the Particle Accelerator Conference (PAC11),NY,NY May 2011

Estimation of Ecloud and TMCI Driven Vertical Instability Dynamics from SPS Measurements - Implications for Feedback Control, O. Turgut, et. al., Presented at the Particle Accelerator Conference (PAC11),NY,NY May 2011

11.424 GHz Stripline Transversal Filter for Sub-Picosecond Bunch Timing Measurements, D. Van Winkle, A. Young, J. Fox, Presented at the Beam Instrumentation Workshop BIW-10, SLAC Pub 14168

SPS Ecloud Instabilities---Analysis of machine studies and implications for Ecloud Feedback J. Fox et al, Presented at the International Particle Accelerator Conference (IPAC10), Kyoto, Japan May 2010

LHC Beam Diffusion Dependence on RF Noise: Models and Measurements, T. Mastorides et. al., Presented at the International Particle Accelerator Conference (IPAC10), Kyoto, Japan May 2010

Commissioning of the LHC Low Level RF System Remote Configuration Tools, D. Van Winkle et. al., Presented at the International Particle Accelerator Conference (IPAC10), Kyoto, Japan May 2010

Simulation of E-cloud Driven Instability and its Attenuation Using a Feedback System in the CERN SPS, J.-L. Vay et. al.,Contributed Talk at the International Particle Accelerator Conference (IPAC10), Kyoto, Japan May 2010

Feedback Configuration Tools for LHC Low Level RF System. D. Van Winkle, J. Fox, T. Mastorides, C. Rivetta,

(SLAC) P. Baudrenghien, A. Butterworth, J. Molendijk, (CERN) . SLAC-PUB-13613, Dec 16, 2009. 3pp. Presented at Particle Accelerator Conference (PAC 09), Vancouver, BC, Canada, 4-8 May 2009

Feedback Techniques and Ecloud Instabilites - Design Estimates. J.D. Fox, T. Mastorides, G. Ndabashimiye, C. Rivetta, D.Van Winkle, (SLAC) , J. Byrd, J-L Vay, (LBL, Berkeley) , W. Hofle, G. Rumolo, (CERN) , R.De Maria, (Brookhaven) . SLAC-PUB-13634, May 18, 2009. 4pp. Presented at Particle Accelerator Conference (PAC 09), Vancouver, BC, Canada, 4-8 May 2009

Application of Non-Linear Time-Domain RF Simulations to Longitudinal Emittance Studies for the LHC. T. Mastorides, C. Rivetta, J.D. Fox, D.Van Winkle, (SLAC) . SLAC-PUB-13631, May 15, 2009. 3pp. Presented at Particle Accelerator Conference (PAC 09), Vancouver, BC, Canada, 4-8 May 2009

PEP-X: RF Issues and Initial Estimates, C. Rivetta, T. Mastorides and J. Fox, SLAC Technical Note SLAC-TN-08-003 December 2008

Lessons Learned from PEP-II LLRF and Longitudinal Feedback, J. D. Fox, Themis Mastorides, Claudio Hector Rivetta, Daniel Van Winkle and D. Teytelman. Presented at the European Particle Accelerator Conference (EPAC 08), Genova, Italy 22 - 27 June 2008

Investigations into Cost Reductions of X-Band Instrumentations, Daniel Van Winkle, V. Dolgashev, J. D. Fox, S. Tantawi, Presented at the European Particle Accelerator Conference (EPAC 08), Genova, Italy 22 - 27 June 2008

Modeling and simulation of the longitudinal beam dynamics-RF Station Interaction in the LHC Rings, Themis Mastorides, J. D. Fox, Claudio Hector Rivetta, Daniel Van Winkle, P. Baudrenghien, J. Tuckmantel, Presented at the European Particle Accelerator Conference (EPAC 08), Genova, Italy 22 - 27 June 2008

Commissioning of the iGp Feedback System at DAFNE, Alessandro Drago, D. Teytelman, M. Tobiyama, J. D. Fox Presented at the European Particle Accelerator Conference (EPAC 08), Genova, Italy 22 - 27 June 2008

Measurements and Analysis of Longitudinal HOM Driven Coupled Bunch Modes in PEP-II Rings. T Mastorides, C. Rivetta, J.D. Fox, D.Van Winkle (SLAC) . SLAC-PUB-13289, Jul 7, 2008. 6pp. Contributed to 13th Beam Instrumentation Workshop (BIW08), Lake Tahoe, California, 4-8 May 2008.

Suppression of longitudinal coupled-bunch instabilities at the KEK-PF. T. Obina, M. Tobiyama, T. Honda, M. Tadano, J.W. Flanagan, T. Mitsuhashi, (KEK, Tsukuba) , W.X. Cheng, J.D. Fox, (SLAC) , D. Teytelman, (Dimtel, Redwood City) . May 2008. 5pp. Published in *Tahoe City 2008, Beam instrumentation Workshop 2008* 203-207

Measurements and Analysis of Longitudinal HOM Driven Coupled Bunch Modes in PEP-II Rings. T Mastorides, C. Rivetta, J.D. Fox, D.Van Winkle (SLAC) . SLAC-PUB-13289, Jul 7, 2008. 6pp. Contributed to 13th Beam Instrumentation Workshop (BIW08), Lake Tahoe, California, 4-8 May 2008.

Stripline Transversal Filter Techniques for Sub-picosecond Bunch Timing Measurements. John D. Fox, Themis Mastorides, Claudio Hector Rivetta, Daniel Van Winkle (SLAC) . SLAC-PUB-12631, Jul 6, 2007. 7pp. Presented at 8th European Workshop on Beam Diagnostics and Instrumentation for Particle Accelerators (DIPAC 2007), Venice, Italy, 20-23 May 2007.

Selecting RF Amplifiers for Impedance Controlled LLRF Systems - Nonlinear Effects and System Implications. John D. Fox, Themis Mastorides, Claudio Hector Rivetta, Daniel Van Winkle (SLAC) . PAC07-WEPMS047, SLAC- PUB-12636, Jul 6, 2007. 7pp. Proceedings of Particle Accelerator Conference (PAC 07), Albuquerque, New Mexico, 25-29 Jun 2007, pp 2451.

Analysis of the Longitudinal Low-Order Mode Beam Dynamics in PEP-II Rings at High Current Beams. T. Mastorides, C. Rivetta, J.D. Fox, D. Teytelman, D. Van Winkle (SLAC) . PAC07-MOPAS062, SLAC-PUB-12654, Jul 16, 2007. 4pp. In the Proceedings of Particle Accelerator Conference (PAC 07), Albuquerque, New Mexico, 25-29 Jun 2007, pp 575. Also in *Albuquerque 2007, Particle accelerator* 575-577

Design and Testing of Gproto Bunch-by-bunch Signal Processor, D. Teytelman, C. Rivetta, D. Van Winkle, R. Akre,

J. Fox, A. Krasnykh, A. Drago Contributed to European Particle Accelerator Conference (EPAC 06), Edinburgh, Scotland, 26-30 Jun. 2006

"Amplitude Linearizers for PEP-II 1.2 MW Klystrons and LLRF Systems", Daniel Van Winkle, Mike Browne, John Fox, Themis Mastorides, Claudio Hector Rivetta, Dmitry Teytelman, Presented at European Particle Accelerator Conference (EPAC 06), Edinburgh, Scotland, 26-30 Jun. 2006

"Klystron Linearizer for use with 1.2 MW 476 MHz Klystrons in PEP-II RF Systems", J. Fox, S. Gallo, T. Mastorides, D. Teytelman, D. Van Winkle and Y. B. Zhou, Presented at the 2005 Particle Accelerator Conference (PAC 2005) Knoxville, Tn, May 2005

"In Depth Diagnostics for RF System Operation in the PEP-II B Factory", Daniel Van Winkle, John Fox, Dmitry Teytelman, Presented at the 2005 Particle Accelerator Conference (PAC 2005) Knoxville, Tn, May 2005

"Operating Performance of the Low Group Delay Woofer Channel in PEP-II." D Teytelman, D. Van Winkle, J. Fox (SLAC), SLAC-PUB-11253, PAC-2005-MPPP007, May 2005.

"Measurements of Transverse Coupled-Bunch Instabilities in PEP-II", D. Teytelman, R. Akre, J. Fox, S. Heifets, A. Krasnykh, D. Van Winkle, and U. Wienands, Presented at the 2004 European Particle Accelerator Conference (EPAC 2004) Lucerne, Switzerland, July 2004

"Development and Testing of a Low Group-delay Woofer Channel for PEP-II", D. Teytelman, L. Beckman, D. Van Winkle, J. Fox, and A. Young, Presented at the 2004 European Particle Accelerator Conference (EPAC 2004) Lucerne, Switzerland, July 2004

"Low-Mode Coupled Bunch Feedback Channel for PEP-II", L. Beckman, N. Hassanpour, L. Sapozhnikov, D. Teytelman, J. Fox, presented at the 2003 Particle Accelerator conference

"Report on DAFNE longitudinal quadrupole measurements done on 9-12 November 2002", A. Drago, J. Fox, M. Serio, D. Teytelman DAFNE Technical Note BM-10

"Set-up of PEP-II Longitudinal Feedback Systems for Even/Odd Bunch Spacings", D. Teytelman and J. Fox Presented at the Beam Instrumentation Workshop, Upton NY, May 2002

"Frequency Resolved Measurement of Longitudinal Impedances Using Transient Beam Diagnostics". D. Teytelman, J. Fox, S. Prabhakar (SLAC), J. Byrd (LBL, Berkeley), SLAC-PUB-8884, PAC-2001-WOPA006, Jun 2001. 4pp. Presented at IEEE Particle Accelerator Conference (PAC 2001), Chicago, Illinois, 18-22 Jun 2001.

"Harmonic Cavities and Longitudinal Beam Stability in Electron Storage Rings" J. Jacob, V. Serriere (ESRF, Grenoble), J. Byrd, S. De Santis, G. Stover (LBL, Berkeley), M. Georggson (MAXLab), J. Fox, D. Teytelman (SLAC), (INVITED). PAC-2001-WOPA001, Aug 2001. 5pp. Presented at IEEE Particle Accelerator Conference (PAC2001), Chicago, Illinois, 18-22 Jun 2001.

"High Current Multibunch Operation at DAPHNE", C. Biscari, A. Drago, A. Gallo, A. Ghigo, F. Marcellini, C. Milardi, M. Serio, A. Stella, M. Zobov (INFN), J. Fox, D. Teytelman (SLAC), PAC-2001-RPPH130, Aug 2001. 3pp. Presented at IEEE Particle Accelerator Conference (PAC2001), Chicago, Illinois, 18-22 Jun 2001.

 "Programmable DSP-Based multi-bunch feedback - operational experience from six installations", J. Fox, et al, presented at the Beam Instrumentation Workshop, Cambridge Massachusetts, May 2000

"Design and implementation of IIR algorithms for control of longitudinal coupled-bunch instabilities", D. Teytelman, et al, presented at the Beam Instrumentation Workshop, Cambridge Massachusetts, May 2000

"Architecture and technology of 500 Msample/s feedback systems for control of coupled-bunch instabilities", D. Teytelman, R. Claus, J. Fox, H. Hindi, I. Linscott, S.Prabhakar, W. Ross, A. Young, A. Drago, and M. Serio Proceedings of the 1999 ICALEPS conference

"Measurements of a Fast Vertical Instability in the PEP-II HER", S. Prabhakar, D. Teytelman, J.Fox, M. Minty, U. Wienands, A. Young, SLAC, W. Barry, LBL, SLAC-PEP-II-AP-NOTE-99-04

"Calculation of Impedance from Multi-bunch Synchronous Phases: Theory and Experimental Results", S.Prabhakar, J. Fox, H. Hindi, D. Teytelman, A. Young, Proceedings of the 1998 European Particle Accelerator Conference

"Beam Diagnostics and Experiments on Multibunch Longitudinal Dynamics using a Digital Feedback System at PEP-II, ALS and SPEAR", S. Prabhakar, et al, Presented at the April 1998 meeting of the American Physical Society, Columbus, Ohio

"Beam Diagnostics based on Time-Domain Bunch-by-Bunch Data", D. Teytelman, J. Fox, H. Hindi, C. Limborg, I. Linscott, S. Prabhakar, J. Sebek, A. Young, SLAC, A. Drago, M. Serio, INFN Frascati, W. Barry, G. Stover, LBL Proceedings of the 1998 Beam Instrumentation Workshop

"Commissioning Experience from PEP-II HER Longitudinal Feedback", S. Prabhakar, D. Teytelman, J. Fox, A. Young, P. Corredoura Proceedings of the 1998 Beam Instrumentation Workshop

"Low-mode Longitudinal Motion in the PEP-II HER", S. Prabhakar, P. Corredoura, J. Fox, D. Teytelman, R. Tighe, A. Young, SLAC-PEP-II-AP-NOTE-98-06

"Calculation of impedance from multibunch synchronous phases: Theory and experimental results", S. Prabhakar, J. Fox, H. Hindi, D. Teytelman, A. Young, SLAC-PEP-II-AP-NOTE-98-04,Feb 98

"RF and Baseband Signal Processing in the PEP-II/ALS/DAFNE Longitudinal Feedback System", A. Young, J. Fox and D. Teytelman, in Proc. Beam Diagnostics and Instrumentation for Particle Accelerators (DIPAC 97), Frascati, Italy, (1997)

"A Matrix Formalism for Landau Damping," S. Prabhakar, J.Fox, H.Hindi, talk given at the Advanced ICFA Workshop on Beam Dynamics Issues for e+e- Factories, Frascati, Oct. 1997. Published in "Frascati Physics Series."

"VXI based Multibunch Detector and QPSK Modulator for the PEP-II/ALS/DAFNE Longitudinal Feedback Systems", A. Young, J. Fox and D. Teytelman, in Proc. Particle Accelerator Conference, Vancouver, (1997)

"Control of Multibunch Longitudinal Instabilities and Beam Diagnostics Using a DSP-Based Feedback System," D. Teytelman, R. Claus, J. Fox, H. Hindi, R. Larsen, I. Linscott, S. Prabhakar, W. Ross, A Young, A. Drago, M. Serio and G. Stover, in Proc. Particle Accelerator Conference, Vancouver, (1997)

"Design and Verification of Controllers for Longitudinal Oscillations Using Optimal Theory and Numerical Simulation: Predictions for PEP-II", H.Hindi, S.Prabhakar, J.D.Fox, D.Teytelman, in Proc. Particle Accelerator Conference, Vancouver, (1997).(Also SLAC PEP-II AP NOTE 97:20)

"Use of Digital Feedback System as a Bunch by Bunch Current Monitor: Results from ALS," S. Prabhakar, D.Teytelman, J.Fox, H.Hindi, SLAC PEP-II AP NOTE 96:29, (1996)

"Clustering Using a Pairwise Nearest Neighbor (PNN) Algorithm", H. Hindi, S. Prabhakar, D. Teytelman and J. Fox, PEP-II AP Note No. 96.26, (1996)

"Analysis, Control and Modal Analysis of Coupled-Bunch Longitudinal Instabilities", Fox, J. D. et al, Proceedings of the 1996 European Particle Accelerator Conference, Sitges, Spain 6/96

"Feedback Control and Beam Diagnostic Algorithms for a Multi-processor DSP System", Teytelman, D., et al, Proceedings of the 1996 Accelerator Instrumentation Workshop, Chicago, IL 5/96

"Operation and Performance of the PEP-II Prototype Longitudinal Damping System at the ALS", D. Teytelman et al, Proceedings of the 1995 Particle Accelerator Conference, Dallas TX 5/95

"Operation and Performance of a Longitudinal Feedback System Using Digital Signal Processing", D. Teytelman, et al, Proceedings of the 1994 Accelerator Instrumentation Workshop, Vancouver B.C. 10/94

"Bunch by Bunch Longitudinal Feedback System for PEP-II", G. Oxoby, et al, Proceedings of the 1994 European Particle Accelerator Conference, London, England 6/94

"Operation and Performance of a Longitudinal Damping System Using Parallel Digital Signal Processing", J. Fox, et al, Proceedings of the 1994 European Particle Accelerator Conference, London, England 6/94

"A Longitudinal Multi-Bunch Feedback System using Parallel Digital Signal Processors", Sapozhnikov, L., J. Fox, J. Olsen, G. Oxoby, I. Linscott, A. Drago and M. Serio, Proceedings of the 1993 Accelerator Instrumentation Workshop, Santa Fe, NM 10/93

"Measurement of Multi-Bunch Transfer Functions Using Time Domain Data and Fourier Analysis", Hindi, H., L. Sapozhnikov, J. Fox, S. Prabhakar, G. Oxoby, I. Linscott and A. Drago, "Proceedings of the 1993 Accelerator Instrumentation Workshop, Santa Fe, NM 10/93

"Analysis of DSP-based Longitudinal Feedback System: Trials at SPEAR and ALS", Hindi, H., N. Eisen, J. Fox, I. Linscott, G. Oxoby, L. Sapozhnikov and M. Serio, Proceedings of the 1993 IEEE Particle Accelerator Conference, Washington D.C. 5/93

"Down Sampled Signal Processing for a B Factory Bunch by Bunch Feedback System", H. Hindi, W. Hosseini, D. Briggs, J. Fox and A. Hutton, Proceedings of the third European Particle Accelerator Conference, 3/92, 1067-1069

"Prompt Bunch by Bunch Synchrotron Oscillation Detection by a Fast Phase Measurement", Briggs, D., P. Corredoura, J. D. Fox, A. Gioumousis, W. Hosseini, L. Klaisner, J. L. Pellegrin, K. A. Thompson and G. Lambertson, Proceedings of the IEEE Particle Accelerator Conference, 5/91, 1404-1406.

"Computer modeling of bunch by bunch feedback for the SLAC B-factory design", D. Briggs, J. D. Fox, W. Hosseini, L. Klaisner, P. Morton, J. L. Pellegrin, K. A. Thompson and G. Lambertson, Proceedings of the IEEE Particle Accelerator Conference, 5/91, 1407-1409.

"Analysis and Simulation of the SLD WIC Pads Hybrid Preamplifier Circuitry," Fox, J. D. and D. Horelick, IEEE Trans. on Nuclear Science, Vol. 38, No. 2, 63-68 (1991)

"The Front-End Analog and Digital Signal Processing Electronics for the Drift Chambers of the Stanford Large Detector," Haller, G., D. Freytag, J. Fox, J. Olsen, L. Paffrath, A. Yim and A. Honma, IEEE Trans. on Nuclear Science, Vol. 38, No. 2, 363-369 (1991)

"Electronic Technology and the SLD Detector", Fox, J. D. and the SLD Engineering Staff, Nuclear Physics B, Vol. 23A, 227-238 (1991)

"The MCSA II - A Broadband, High Resolution, 60 Mchannel Spectrometer", I. Linscott, J. Twicken, E. Linstadt, J. Duluk, J. Burr, A. Peterson, and J. Fox, Proceedings of the IEEE Asilomar Conference on Signals, Systems and Computers, 11/89, 502-508.

"The Liquid Argon Calorimeter System for the SLD Large Detector," G. Haller, J. Fox, D. Nelson, and S. Smith, IEEE Trans. on Nuclear Science, Vol. 36, No. 1, 675-679 (1989).

"A Cryogenic Monitor System for the Liquid Argon Calorimeter in the SLD Detector," M.J. Fox and J. Fox, IEEE Trans. on Nuclear Science, Vol. 36, No. 1,751-755 (1989).

"A Status Report on the SLD Data Acquisition System," Breidenbach, M. and the SLD Collaboration, Invited paper at the 1988 Nuclear Science Symposium. IEEE Trans. on Nuclear Science, Vol. 36, No. 1 23-28 (1989).

"A Networked Real-Time Control System for the Stanford Photon Research Laboratory," C. Cork, J. Fox, and R. Melen, Proc. IEEE Particle Accelerator Conference, Vol. 2, 716-718 (1987).

"Excitation and Detection of 8.4 MHz Acoustic Waves in Air," J. D. Fox, B. T. Khuri-Yakub, and G. S. Kino, Published in 1984 Ultrasonics Symposium Proceedings, Vol. 1, IEEE Catalog No. 84CH2112-1SU, Ed: B. R.

McAvoy, 475-479 (Institute of Electrical & Electronics Engineers, Inc., New York, 1984).

"High-Frequency Acoustic Wave Measurements in Air," J. D. Fox., B. T. Khuri-Yakub, and G. S. Kino, Published in 1983 Ultrasonics Symposium Proceedings, Vol. 1, IEEE Catalog No. 83CH1947-1SU, Ed: B. R. McAvoy, 581 (Institute of Electrical & Electronics Engineers, Inc., New York, 1983).

"Phase and Amplitude Detection System for the Stanford Linear Accelerator," J.D. Fox and H. Schwarz, IEEE Trans. on Nuclear Science NS-30 (4), 2264-2266 (1983).

"Applications of Local Area Networks to Accelerator Control Systems at the Stanford Linear Accelerator," J.D. Fox, E. Linstadt, and R. Melen, IEEE Trans. on Nuclear Science NS-30 (4), 2317-2319 (1983).

"A Microprocessor-Controlled Phase Detection System for 2856 MHz Pulses," J. D. Fox and H. Schwarz, IEEE Microwave Theory and Techniques Digest, ISSN 0149-645X, 334-336 (1982).

"A Luminosity Monitor at PEP," J. D. Fox and M. E. B. Franklin, IEEE Trans. on Nuclear Science NS-28 (3), 2210-2213 (1981).

"Beam-Derived Trigger System for Multibunch Time-of-Flight Measurement," J. D. Fox and J. L. Pellegrin, PEP Note 329, Stanford Linear Accelerator Center (1981)

"The PEP Computer and Control System," PEP I&C Group and PEP Theory Group, IEEE Trans. on Nuclear Science NS-20, 3268-3271 (1979).