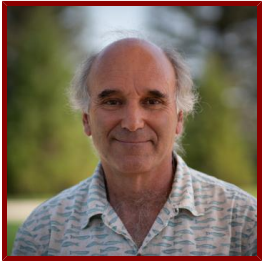


Stanford



John Fox

Adjunct Professor

Applied Physics

 Curriculum Vitae available Online

Bio

BIO

Stanford University Research areas center on optimal control methods to improve energy efficiency and resource allocation in plug-in hybrid vehicles. Stanford graduate courses taught in laboratory techniques and electronic instrumentation. Undergraduate seminar "Energy Choices for the 21st Century".

Accelerator Physics Research areas center on RF systems and beam dynamics, instability control for particle accelerators, technology development for beam instrumentation. Group leader for LARP projects in LHC LLRF techniques and feedback control of electron-cloud instabilities in SPS and LHC. 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.

Research and thesis supervision for Stanford Ph.D. and M.S. students in Applied Physics and Electrical Engineering. Two supervised students awarded American Physical Society Ph.D. Dissertation Prizes in Beam Physics (Shyam Prabhakar, Dmitry Teytelman). Ph.D. student Themis Mastorides awarded the 2010 Toohig Fellowship in Accelerator Physics at the LHC. Two supervised Ph.D. students now faculty at University of Singapore and California Polytechnic University.

I have advised 5 Ph.D. students through to completion of the Ph.D.. I have supervised 13 M.S. students in the areas of Applied Physics and Electrical Engineering

ACADEMIC APPOINTMENTS

- Adjunct Professor, Applied Physics

ADMINISTRATIVE APPOINTMENTS

- SuperKEKB Machine Advisory Committee, KEK Laboratory, Tsukuba, Japan, (2008- present)

HONORS AND AWARDS

- Dean's Award for Distinguished Teaching, Stanford Humanities and Sciences (2001)
- Fellow, Division of the Physics of Beams, American Physical Society (2008)
- Senior Member, IEEE (2018)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Machine Advisory Committee, SuperKEKB KEK laboratory, Japan (2008 - present)

PROFESSIONAL EDUCATION

- Ph.D., Stanford University , Applied Physics, Ph.D. minor in Electrical Engineering (1986)
- A.B., Harvard University , Physics (1977)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Accelerator Physics Research areas center on RF systems and beam dynamics, instability control for particle accelerators, technology development for beam instrumentation. Group leader for

LARP projects in LHC LLRF techniques and feedback control of electron-cloud instabilities in SPS and LHC. 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.

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PROJECTS

- Optimal Control Methods for Fuel Efficiency and Battery Health & Longevity for PHEVs - Stanford University sponsored by the Ford-Stanford Alliance

Teaching

COURSES

2025-26

- Energy Options for the 21st Century: APPPHYS 79N (Aut)
- Introduction to Electronic Techniques for Physics Research Instrumentation : PHYSICS 104 (Aut)

- Laboratory Electronics: APPPHYS 207 (Win)

2024-25

- Energy Options for the 21st Century: APPPHYS 79N (Aut)
- Introduction to Electronic Techniques for Physics Research Instrumentation : PHYSICS 104 (Aut)
- Laboratory Electronics: APPPHYS 207 (Win)
- Laboratory Electronics: APPPHYS 208 (Spr)

2023-24

- Electronics and Introduction to Experimental Methods: PHYSICS 104 (Aut)
- Energy Options for the 21st Century: APPPHYS 79N (Aut)
- Laboratory Electronics: APPPHYS 207 (Win)

2022-23

- Electronics and Introduction to Experimental Methods: PHYSICS 104 (Aut)
- Energy Options for the 21st Century: APPPHYS 79N (Aut)
- Laboratory Electronics: APPPHYS 207 (Win)
- Laboratory Electronics: APPPHYS 208 (Spr)

STANFORD ADVISEES

Doctoral (Program)

Aaron Ghrist, Mason Kamb, Rose Knight, Arjun Mirani, Ethan Rosenfeld, Isleydys Silva Torrecilla, Jierong Wang

Publications

PUBLICATIONS

- **Future Circular Collider Feasibility Study Report: Volume 1 Physics, Experiments, Detectors** *EUROPEAN PHYSICAL JOURNAL C*
Benedikt, M., Zimmermann, F., Auchmann, B., Bartmann, W., Burnet, J. P., Carli, C., Chance, A., Craievich, P., Giovannozzi, M., Grojean, C., Gutleber, J., Hanke, K., Henriques, et al
2025; 85 (12)
- **Future Circular Collider Feasibility Study Report** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
Benedikt, M., Zimmermann, F., Auchmann, B., Bartmann, W., Burnet, J. P., Carli, C., Chance, A., Craievich, P., Giovannozzi, M., Grojean, C., Gutleber, J., Hanke, K., Henriques, et al
2025; 234 (19): 5713-6197
- **Future Circular Collider Feasibility Study Report Volume 3 Civil Engineering, Implementation and Sustainability (vol 234, pg 5113, 2025)** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
Benedikt, M., Zimmermann, F., Auchmann, B., Bartmann, W., Burnet, J. P., Carli, C., Chance, A., Craievich, P., Giovannozzi, M., Grojean, C., Gutleber, J., Hanke, K., Henriques, et al
2025; 234
- **Future Circular Collider Feasibility Study Report Volume 3 Civil Engineering, Implementation and Sustainability** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
Benedikt, M., Zimmermann, F., Auchmann, B., Bartmann, W., Burnet, J. P., Carli, C., Chance, A., Craievich, P., Giovannozzi, M., Grojean, C., Gutleber, J., Hanke, K., Henriques, et al
2025; 234 (17): 5113-5383
- **A Novel High-Efficiency Three-Phase Multilevel PV Inverter With Reduced DC-Link Capacitance** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*
Chen, T., Gu, L., Dally, W. J., Rivas-Davila, J., Fox, J.
2023; 70 (5): 4751-4761

- **Hardware Demonstration of a Novel Three-Phase Multilevel Inverter**
Chen, T., Gu, L., Dally, W., Fox, J., IEEE
IEEE.2022
- **Beam gap transient analysis and mitigations in high-current storage rings for an electron-ion collider** *PHYSICAL REVIEW ACCELERATORS AND BEAMS*
Mastoridis, T., Fox, J. D., Guo, J., Rimmer, R. A., Wang, H.
2020; 23 (10)
- **Optimal Operation of a Plug-in Hybrid Vehicle with Battery Thermal and Degradation Model**
Kim, J., Park, Y., Fox, J. D., Boy, S. P., Dally, W., IEEE
IEEE.2020: 3083–90
- **Multiple Input Multiple Output (MIMO) Control of a Novel Three Phase Multilevel Inverter**
Chen, T., Dally, W. J., Fox, J., IEEE
IEEE.2020: 705-712
- **HE-LHC: The High-Energy Large Hadron Collider Future Circular Collider Conceptual Design Report Volume 4** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
Abada, A., Abbrescia, M., AbdusSalam, S. S., Abdyukhanov, I., Abelleira Fernandez, J., Abramov, A., Aburaia, M., Acar, A. O., Adzic, P. R., Agrawal, P., Aguilar-Saavedra, J. A., Aguilera-Verdugo, J. J., Aiba, et al
2019; 228 (5): 1109–1382
- **FCC-hh: The Hadron Collider: Future Circular Collider Conceptual Design Report Volume 3** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
Abada, A., Abbrescia, M., AbdusSalam, S. S., Abdyukhanov, I., Abelleira Fernandez, J., Abramov, A., Aburaia, M., Acar, A. O., Adzic, P. R., Agrawal, P., Aguilar-Saavedra, J. A., Aguilera-Verdugo, J. J., Aiba, et al
2019; 228 (4): 755–1107
- **FCC Physics Opportunities: Future Circular Collider Conceptual Design Report Volume 1** *EUROPEAN PHYSICAL JOURNAL C*
Abada, A., Abbrescia, M., AbdusSalam, S. S., Abdyukhanov, I., Fernandez, J., Abramov, A., Aburaia, M., Acar, A. O., Adzic, P. R., Agrawal, P., Aguilar-Saavedra, J. A., Aguilera-Verdugo, J. J., Aiba, et al
2019; 79 (6)
- **FCC-ee: The Lepton Collider: Future Circular Collider Conceptual Design Report Volume 2** *EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS*
Abada, A., Abbrescia, M., AbdusSalam, S. S., Abdyukhanov, I., Fernandez, J., Abramov, A., Aburaia, M., Acar, A. O., Adzic, P. R., Agrawal, P., Aguilar-Saavedra, J. A., Aguilera-Verdugo, J. J., Aiba, et al
2019; 228 (2): 261–623
- **Improved Interface Circuits for CMUT Chemical Sensors**
Stedman, Q., Fox, J. D., Khuri-Yakub, B. T., IEEE
IEEE.2019: 989–92
- **Optimal Operation of a Plug In Hybrid Vehicle** *IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY*
Platt, J., Moehle, N., Fox, J. D., Dally, W.
2018; 67 (11): 10366–77
- **Equalizer design techniques for dispersive cables with application to the SPS wideband kicker** *NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION A-ACCELERATORS SPECTROMETERS DETECTORS AND ASSOCIATED EQUIPMENT*
Platt, J., Hofle, W., Pollock, K., Fox, J.
2017; 868: 93–97
- **The Physics of the B Factories** *EUROPEAN PHYSICAL JOURNAL C*
Bevan, A. J., Golob, B., Mannel, T., Prell, S., Yabsley, B. D., Abe, K., Aihara, H., Anulli, F., Arnaud, N., Aushev, T., Beneke, M., Beringer, J., Bianchi, et al
2014; 74 (11): I-898
- **INSTABILITIES SIMULATIONS WITH WIDEBAND FEEDBACK SYSTEMS: CMAD, HEADTAIL, WARP**
Li, K., Cesaratto, J., Fox, J. D., Pivi, M., Rivetta, C., Rumolo, G.
edited by Cimino, R., Rumolo, G., Zimmermann, F.

CERN.2013: 203–10

- **Radio frequency noise effects on the CERN Large Hadron Collider beam diffusion** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*
Mastoridis, T., Baudreghien, P., Butterworth, A., Molendijk, J., Rivetta, C., Fox, J. D.
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- **RF system models for the CERN Large Hadron Collider with application to longitudinal dynamics** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*
Mastorides, T., Rivetta, C., Fox, J. D., Van Winkle, D., Baudreghien, P.
2010; 13 (10)
- **Lessons learned from positron-electron project low level rf and longitudinal feedback** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*
Fox, J., Mastorides, T., Rivetta, C., Van Winkle, D., Teytelman, D.
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- **Analysis of longitudinal beam dynamics behavior and rf system operative limits at high-beam currents in storage rings** *PHYSICAL REVIEW SPECIAL TOPICS-ACCELERATORS AND BEAMS*
Mastorides, T., Rivetta, C., Fox, J. D., Van Winkle, D., Teytelman, D.
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- **Selecting RF amplifiers for impedance controlled LLRF systems - Nonlinear effects and system implications** *IEEE Particle Accelerator Conference*
Fox, J. D., Mastorides, T., Rivetta, C. H., Van Winkle, D.
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- **Curing coupled-bunch instabilities with uneven fills.** *Physical review letters*
Prabhakar, S., Fox, J. D., Teytelman, D.
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- **A CRYOGENIC MONITOR SYSTEM FOR THE LIQUID ARGON CALORIMETER IN THE SLD DETECTOR** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
Fox, M. J., Fox, J. D.
1989; 36 (1): 751-755
- **ACOUSTIC MICROSCOPY IN AIR AT 2 MHZ** *APPLIED PHYSICS LETTERS*
Fox, J. D., Kino, G. S., KHURIYAKUB, B. T.
1985; 47 (5): 465-467
- **A LUMINOSITY MONITOR AT PEP** *IEEE TRANSACTIONS ON NUCLEAR SCIENCE*
Fox, J. D., FRANKLIN, M. E.
1981; 28 (3): 2210-2212