

Dr. Todd J. Satogata

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OBJECTIVES

To perform research related to beam diagnostics and accelerator physics analysis of existing and future accelerator physics facilities; to develop progressive curricula for teaching physics, with emphasis on development of hands-on research opportunities for undergraduate and graduate students, and outreach to regional secondary schools.

TEACHING EXPERIENCE

University of California, Davis	January 2017
Duke University	January 2013
S.U.N.Y. Stony Brook University	June 2011
Vanderbilt University	January 2009
University of Maryland	June 2008
University of California, Santa Cruz	January 2008

Taught graduate level courses in advanced accelerator physics through the US Particle Accelerator School (USPAS).

Old Dominion University	Fall 2012, Spring 2014, Fall 2016
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Taught first-year required physics course for undergraduate science and engineering majors.

Old Dominion University	Spring 2011
S.U.N.Y. Stony Brook University	Fall 2008, Fall 2009, Spring 2010

Taught graduate level courses on scientific presentation preparation and practice, focusing on solid state and condensed matter physics.

Old Dominion University	Fall 2011, Spring 2018
S.U.N.Y. Stony Brook University	Fall 2000, Fall 2007

Taught undergraduate/graduate physics courses on accelerator physics and nonlinear dynamics.

PROFESSIONAL EXPERIENCE

Senior Staff Scientist, Jefferson Lab	2010–Present
Acting Director, Center for Advanced Studies of Accelerators	Oct 2017–Present

Leader of beam transport team, coordinating CEBAF modeling and advising graduate students in optics and beam breakup experiments in preparation for 12 GeV upgrade commissioning. Lead pCDR development for JLEIC.

Jefferson Lab Professor of Physics, Old Dominion University	2012–Present
Adjunct Assistant Professor of Physics, Old Dominion University	2010–2012

Adjunct Assistant Professor of Physics, S.U.N.Y. Stony Brook	2009–2010
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Founding member of Center for Accelerator Science and Education (CASE).

Project Physicist, Rapid Cycling Medical Synchrotron, BNL	2007
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Project deputy in charge of accelerator physics, lattice design, and system integration in contract with NanoLife, Inc. to develop engineering design for a new cancer therapy proton accelerator.

Low-Energy Coordinator, Collider-Accelerator Department, BNL	2006–2010
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Leader of BNL accelerator effort to develop operations at low energies ($\sqrt{s} = 5 - 30 \text{ GeV}$) to search for nuclear phase transition critical point. Achieved objectives of three successful test physics runs in 2006–8. Run coordinator for first operations Spring 2010.

Deuteron-Gold Run Coordinator, Collider-Accelerator Department, BNL	2002–2003
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Led planning and 16-week operations run of the first asymmetric-species collider run at RHIC, colliding deuterons and gold nuclei at $\sqrt{s} = 200$ GeV and producing 15–25 nb^{-1} integrated luminosity at each experiment.

Scientist, Collider-Accelerator Department, BNL **2000–2010**

Leader of Operations Analysis subgroup in accelerator physics. Physicist shift leader for RHIC Operations. Collaborating on studies of proton computed tomography for proton radiotherapy. Scheduling physicist for AGS and RHIC complex, 2000–1. Led planning and operations of a successful single-day $\sqrt{s} = 30$ GeV RHIC run in 2001. RHIC tour guide and educational outreach speaker.

Associate Scientist, RHIC Project, BNL **1998–2000**

Assistant Scientist, RHIC Project, BNL **1995–1998**

Postdoctoral Assistant, RHIC Project, BNL **1993–1995**

EDUCATION

Fermi National Accelerator Laboratory **1990–1993**

Northwestern University **1987–1993**

Ph.D. in Physics and Astronomy. Dissertation: “Nonlinear Resonance Islands and Modulational Effects in a Proton Synchrotron”.

University of Cincinnati **1983–1987**

Graduated with Bachelor of Arts in Mathematics and Bachelor of Science in Physics (with honors).

SELECTED PUBLICATIONS

- “RHIC Low-Energy Challenges and Plans”, T. Satogata et al, to be published in the Proceedings of Science, arXiv:0710.2485v [physics.acc-ph], 12 Oct 2007.
- “Driven Response of a Trapped Particle Beam”, T. Satogata et al, Phys. Rev. Lett. **68**, pp. 1838–1841 (1992).
- “Hadron Colliders at High Energy”, R.R. Rau and T. Satogata, Encyclopedia of Physics, Third Ed., pp. 958-965 (2005). (Editors R.G.Lerner and G.L.Trigg)
- “Measurements of a Hamiltonian System and their Description by a Diffusive Model”, T. Chen, T. Satogata, et al, Phys. Rev. Lett. **68**, pp. 33–36 (1992).
- “Polarized Proton Collisions at 205 GeV in RHIC”, M. Bai, T. Satogata et al, Phys. Rev. Lett. **96**, 174801 (2006).
- “Electron Cloud Measurements and Simulations for the Brookhaven Relativistic Heavy Ion Collider”, W. Fischer, T. Satogata, et al, Phys. Rev. ST Accel. Beams **5** 124401 (2002).
- “Density Resolution of Proton Computed Tomography”, R. Schulte, T. Satogata et al, Med. Phys. **32**(4) (Apr 2005).
- “Reconstruction for Proton Computed Tomography by Tracing Proton Trajectories: A Monte Carlo Study”, R. Schulte, T. Satogata, J. Singanallur, et al., Med. Phys. **33**(3), pp. 699–706 (2006).
- “Conceptual Design of a Proton Computed Tomography System for Applications in Proton Radiation Therapy”, R. Schulte, T. Satogata, et al., IEEE Trans. Nucl. Sci. **51**(3) (June 2004).
- “Proton-nucleus Collisions at the LHC: Scientific Opportunities and Requirements”, C.A. Salgado, T. Satogata, et al., J. Phys. G: Nucl. Part Phys **39** 015010.

SERVICE

ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams	
International Organizing Committee member	2015-present
International Particle Accelerator Conference	2019
Scientific Advisory Board	
International Particle Accelerator Conference	2018
Scientific Secretariat and Scientific Program Committee	
Joint Accelerator Conferences (JACoW)	2011-present
Vice-Chairman, Board of Directors	
American Physical Society, Division of Physics of Beams	
Publication Committee member	2013-2016
Outreach and Education Committee member	2008-2010
ODU Center for Accelerator Science Steering Committee	2013-present
Committee member.	
International Workshop on Beam Cooling	2015
International Particle Accelerator Conference	2015
International Electron-Ion Collider Workshop	2014
North American Particle Accelerator Conference	2011-2013
Beam Instrumentation Workshop	2012
Future Light Sources Workshop	2012
Editor and Scientific Secretariat.	
North American Regional Representative, JACoW	2010-2014
Communicate and coordinate Joint Accelerator Conferences (JACoW) policy for North American accelerator conferences and workshops.	