Curriculum Vitae
David Toback

Texas A&M University
Department of Physics and Astronomy
Mitchell Institute for Fundamental Physics and Astronomy
College Station, TX 77843-4242
toback@tamu.edu
http://tobackgroup.physics.tamu.edu/toback/
(Updated February 13, 2025)

Education

- *Ph.D., Physics*, December 1997: University of Chicago, Chicago, Illinois
  Thesis: *Searches for New Physics in Diphoton Events in $p\bar{p}$ Collisions at $\sqrt{s} = 1.8$ TeV*
  Thesis Advisor: Professor Henry J. Frisch
  The Nathan Sugerman Graduate Student Prize Award for Graduate Research
- *B.S., Physics*, June 1991: Massachusetts Institute of Technology
  Cambridge, Massachusetts
  Thesis: *Position Resolution of the Detection System of the Out-Of-Plane Spectrometer*
  Thesis Advisor: Professor William Bertozzi

Positions Held[1]

- Professor of Physics and Astronomy, Texas A&M University (CDF, CDMS & CMS), September 2010-Present
- Thaman Professor for Undergraduate Teaching Excellence, Texas A&M University, January 2008-December 2015
- Associate Professor of Physics, Texas A&M University (CDF & CMS), September 2005-August 2010
- Assistant Professor of Physics, Texas A&M University (CDF), September 2000-August 2005
- Research Associate, University of Maryland (DØ), April 1998-August 2000
- Research Associate, University of Chicago (CDF), January 1998-April 1998
- Graduate Student, University of Chicago (CDF), October 1991-December 1997

[1]Note: CDF, CDMS, DØ and CMS are the common acronym-style names of the experiments of which I belong.

Awards and Honors

- *Fraternity Advisor of the Year Award*
  Texas A&M Univesity, Fall 2021
- *High Energy and Particle Physics Prize*
  "For the discovery of the top quark and the detailed measurement of its properties."
  European Physics Society, Summer 2019 (shared)
- *Elected Fellow of the American Physical Society*
  American Physical Society, Fall 2015
- *Faculty Advisor of the Year Award*
  Sigma Alpha Mu International Fraternity, Summer 2014
- *Faculty Advisor Recognition Award*
  Sigma Alpha Mu (Texas A&M/Gamma Kappa Chapter), Spring 2014
- *IFC and CPC Professor*
  Interfraternity Council and Collegiate Panhellenic Council
  Texas A&M University, Fall 2013
- *Fishcamp Namesake* (Camp Toback)
  Texas A&M University, 2012-2013
- *University Professor for Undergraduate Teaching Excellence*
  Named the Arthur J. and Wilhelmina Doré Thaman Professor, 2008-2015
  Texas A&M University, University-Level Award, Spring 2008
  Reappointed, Spring 2012
- *Outstanding Science Communicator Award*
  Texas A&M University Chapter of Sigma Xi, Spring 2012
- *Teacher-Scholar Award*
  Texas A&M University, Honors and Undergraduate Research Program Award, Spring 2011
- *Student Led Award for Teaching Excellence*
  Texas A&M University, System-Wide Award for Accomplishment in Teaching, Fall 2008 and Spring 2010
- *Distinguished Achievement in Teaching Award*
  Association for Former Students, Texas A&M University, University-Level Award, Spring 2007
- *Distinguished Achievement in Teaching Award*
  Association for Former Students, Texas A&M University, College-Level Award, Summer 2004
- *Montague Scholar Award*
  Texas A&M University, Center for Teaching Excellence, Fall 2002
- Award from the Corps of Cadets
  Texas A&M University, Spring 2002
- *The Nathan Sugerman Graduate Student Prize*
  University of Chicago, Enrico Fermi Institute, Award for Graduate Research, Fall 1997

- *The Wayne C. Booth Graduate Student Prize*
  University of Chicago Award for Graduate Student Teaching, Spring 1992
- *The Gregor Wentzel Prize*
  University of Chicago Department of Physics Award for Graduate Student Teaching, Spring 1992

Research Activities[2]

- *CDF Collaboration - Collider Physics at Fermilab Tevatron, Texas A&M University, September 2000-Present:*
  - Leadership Positions
    - Co-Spokesperson (Summer 2014 - Present)
    - Co-Convener of the Combined Top Quark + Beyond the Standard Model + Higgs (TopBSM) Physics Groups (Spring 2012-Spring 2014)
    - Convener of the Supersymmetry Physics Analysis Group (Spring 2010-Fall 2011), Co-Convener (Spring 2007-Fall 2009)
    - Convener of the Very Exotic Physics (VEP) Analysis Group (Fall 2010 - Fall 2011)
    - Leader of the *EMTiming* project to instrument the EM calorimeter with timing readout
    - Co-developer of *ObjectMon*, a Run II online/offline object monitoring program
    - TAMU/CDF Group leader (2010-Present)
  - Physics
    - High-precision measurement of the W boson mass with the CDF II detector (Run II, 8.8 fb^{-1}, Science)
    - Measurement of the forward-backward asymmetry in top-antitop quark pairs (Run II, 9.1 fb^{-1}, PRL and PRD)
    - Model-independent search long-lived particles that decay to photons (Run II, 6.3 fb^{-1} PRD-RC)
    - Measurement of the forward-backward leptonic asymmetry in top-antitop quark pairs (Run II, 9.1 fb^{-1} PRL)
    - Searches for Supersymmetry in the $\gamma\gamma + \not{E}_{\text{T}}$ final state (Run II, 2.6 fb^{-1}, PRL)
    - Search for long-lived Supersymmetric particles that decay to photons (Run II, 570 pb^{-1}, PRL & PRD)
      Recognized by Fermilab as co-winner of the *University Research Association Thesis Award* for 2007
    - Hardware description and performance of the *EMTiming* system (NIM)
    - Searches for Supersymmetry in the $\gamma\gamma + \not{E}_{\text{T}}$ final state (Run II, 200 pb^{-1}, PRD)
    - Search new particles that decay via $X \to WZ$ (Run I, PRL)
    - Search for Supersymmetric top quarks that decay in R-Parity violating modes (Run I, PRL)
- *CDMS Collaboration - Direct Dark Matter Detection, Texas A&M University, May 2013-Present:*
  - Leadership Positions
    - Member of Executive Committee (Summer 2017–Summer 2020, Summer 2024–Present)
    - Chair of Software and Computing Working Group (Summer 2022 - Summer 2024)
    - Chair Software Planning and Management Sub-Working Group (Fall 2020 - Present)

[2]I have broken my activities up into experimental projects (CDF, CDMS, DØ and CMS) and phenomenology projects as doing both is fairly unusual for an experimentalist. I also separately list under each position any leadership position, experiment building projects I played a large role in, and one line about the physics results that resulted in a publication (and where it was published). Note that all leadership positions, for example the SUSY convenership at CDF, are international roles and appointed by experimental leaders. Teaching projects and publications are listed separately.

        * Chair Documentation Management Sub-Committee (Spring 2021 - Present)
        * Level 2 Deputy Manager for Operations Software and Computing (Spring 2019-Present)
        * Level 2 Deputy Manager for Project Software and Computing (Spring 2016-Spring 2019)
        * Level 2 Deputy Manager for the Project Data Acquisition System and Trigger Electronics (Spring 2015-Fall 2021)
        * Chair of Simulations Working Group (Spring 2019-Summer 2020), Deputy Chair (Summer 2020-Spring 2021)
        * Level 3 Manager for Level 1 Trigger (Spring 2018-Fall 2020)
        * Chair of the Policy Committee (Summer 2018 – Summer 2021, Member 2017–2021)
        * Level 3 Manager for Operations Simulations Production (Spring 2019-Present)
        * Level 4 Manager for Operations Data Challenge 3 - Simulations (Spring 2019-Spring 2024)
        * Co-chair of Trigger Task Force (Spring 2014-Spring 2015)
    - Physics
        * Search for Dark Matter (CDMSLite analysis, Spring 2015-Present)
        * Search for Dark Matter (Low threshold analysis, Spring 2015-2023)
        * Search for Dark Matter (HVeV analysis, Spring 2019-Fall 2022)

- *Q-Pix Consortium/DUNE Experiment Upgrade - Neutrino Physics, Texas A&M University, May 2018-Present*:
    - Detector simulations and reconstruction software (2018 – Present)
    - Software Management (2020 – Present)

- *QBit Consortium - Quantum Computing, Texas A&M University, May 2018-Present*:
    - Device simulation (2018 – Present)
    - Device optimization studies (2018 – Present)

- *CMS Collaboration - Collider Physics at LHC, Texas A&M University, May 2005-Present*:
    - Co-founder (2005) and group leader of TAMU/CMS group (2005-2010)
        * Faculty Development Leave (Fall 2005) to join collaboration and secure projects
    - Tier 3 Grid computing
        * Faculty Development Leave (Spring 2011) for Grid computing work
    - Physics Analysis Tool (PAT) Development for the Supersymmetry Group
    - Hadron Calorimeter (HCal) Level 1 Trigger Electronics Simulation, DQM and hardware Commissioning and Validation

- *Phenomenology Activities, Texas A&M University, September 2000-Present:*
    - Extrapolation Technique Pitfalls in Asymmetry Measurements at Colliders (NIM)
    - Prospects for forward-Backward Asymmetry of Leptonic Decays of $t\bar{t}$ at the Fermilab Tevatron (PRD)

- Prospects for measuring the neutralino mass in Gauge Mediated SUSY decays of a Higgs Boson at CDF (JHEP)
- Prospects for discovering the Higgs Boson in Supersymmetric Decay channels in GMSB models at the Tevatron (PLB)
- Prospects for measuring the Dark Matter Relic Density in the co-annihilation region at the LHC (PRL)
  The first systematic method of determining the Dark Matter Relic Density at the LHC
- Prospects for measuring SParticle masses in the co-annihilation region at the LHC (PLB)
- Prospects of discovering Supersymmetry in the co-annihilation region at the LHC (PLB)
- Prospects of discovering long-lived Supersymmetric particles that decay to photons at the Tevatron (PRD)
- Prospects of discovering excited leptons at the Tevatron (PRD)

- *DØ Collaboration - Collider Physics at Fermilab Tevatron, University of Maryland, April 1998-August 2000:*
  - Co-developer of *Sleuth*, a general signature-based search strategy (Run I, PRD)
    This work was recognized as the *American Physical Society Tanaka Prize* winner for 2002
  - Model-independent searches using *Sleuth* on ∼50 final states (Run I, PRL & PRD)
  - Deputy convener New Phenomena physics analysis working group
  - Leader of Run II Trigger Simulation project
  - Designed/simulated the functionality of Run II, Level 2 Tracking Trigger Preprocessor crate
  - Run II, Level 2 electronics *MBT* Interface Card debugging and testing
  - Level 2 electronics Test Stand and Installation Coordinator for Run II
  - Member of Run II Trigger and Dataset Board

- *CDF Collaboration - Collider Physics at Fermilab Tevatron, University of Chicago June 1991-April 1998:*
  - Search for new physics in the $\gamma\gamma + X$ final state (Run I, PRL & PRD)
    This work includes the famous $ee\gamma\gamma \not{E}_{\rm T}$ candidate event and was recognized by the University of Chicago with *The Nathan Sugerman Graduate Student Prize* for 1997
  - Search for new physics in the $\ell\gamma$ final state (Run I, PRL & PRD)
  - Search for new physics in the W + 2 jet final state (Run I, PRL)
  - Maintenance of the Run I, Level 1 calorimeter trigger
  - Design of *Crate Sum*, a Run II Level 1 calorimeter trigger upgrade board
  - Upgrade and maintenance of *SPY*, a Run I online monitoring package
  - Analysis of photomultiplier tube systems for the CDF Run II Plug Upgrade

Funding[3]

The funding for high energy particle physics experiments primarly comes through the U.S. Department of Energy (DOE) or the National Science Foundation (NSF). This funding can typically be separated into three categories: 1) Base Funding to support groups at Universities (salaries and travel), 2) Project or Operations funding (additional funding from an experiment for the University group to take on a specific task) and 3) Equipment and Experiment funding (detector equipment, engineering and operating costs). Faculty can receive the first type of funding, and can receive money from DOE or NSF but not both. Some faculty procure Project/Operations Funding from the experiments. Experimental funding typically goes to the National labs (Fermilab, CERN etc.) and is not listed here. Rarely, other funding can be procured. My University Funding is both through a single "Block Grant" from the DOE. This name is a misnomer as each P.I. is effectively funded independently. I have indicated an approximate portion of my funding for each year from the DOE. I have indicated other sources of funding for other tasks.

Currently Funded:

- Spring 2024–Spring 2027: SuperCDMS Operations *Computing, Research Scientist support*, \$678,608k
- Oct 2024– March 2026: U.S. DOE, *The SuperCDMS Program at Texas AM University for CDMS Activities.* \$250,000
- Spring 2024–Spring 2025: U.S. DOE, *QPix: Achieving kiloton scale pixelated readout for Liquid Argon Time Projection Chambers* (neutrino physics). \$158,0000
- Fall 2023–Fall 2025: SLAC/Stanford Contract *Quantum Computing Simulations Development*, \$50k
- Fall 2024–Fall 2025: Mitchell Institute Funds for High Energy Physics, *Mitchell Institute Computing* \$10k

Submitted

- April 2025–March 2026: U.S. DOE, *The SuperCDMS Program at Texas AM University for CDMS Activities*, \$128,997 for a CDMS Postdoc. Not yet decided
- Spring 2025 –Fall 2028, Dept of the Army – Materiel Command *G4CMP: Geant4-based Condensed Matter Physics Development for Quantum Information Science* \$1,000,000 ($\approx$ \$250k/year). Not yet decided
- Spring 2025–Spring 2029: U.S. DOE, *QPix: Achieving kiloton scale pixelated readout for Liquid Argon Time Projection Chambers* (neutrino physics). \$ 266,427 Not yet decided

Completed

- Fall 2023–Fall 2024: SuperCDMS Operations Computing, Research Scientist support, \$220k
- Fall 2023–Fall 2024: Mitchell Institute Funds for High Energy Physics, \$68k for Mitchell Institute Computing (\$50k) and 1-shot CDMS Postdoc support (\$18k)

[3]These funds are for physics research only. Funding for teaching projects is listed separately

- Fall 2022–Fall 2023: SuperCDMS Operations Computing, Research Scientist support, $211k
- Fall 2022–Spring 2024: U.S. DOE, *Travel for SUPERCDMS SNOLAB Operations*, $75k
- Fall 2022–Spring 2023: High Performance Research Computing Support funds for PhD student, $12.6k
- Fall 2022–Fall 2023: Mitchell Institute Funds for High Energy Physics, $62.5k for Mitchell Institute Computing ($45k) and 1-shot DUNE/QPix student PhD support ($17.5k)
- Fall 2021–Fall 2022: SuperCDMS Operations Computing, Research Scientist support, $205.6k
- Fall 2021–Fall 2022: SuperCDMS Project Warm Electronics Support for DCRC Testing, $13.8k
- Fall 2021–Fall 2022: Mitchell Institute Funds for High Energy Physics, $84k for Mitchell Institute Computing ($42k) and 1-shot CDMS student PhD support ($42k)
- April 2021–March 2024: U.S. DOE, *High Energy Physics at Texas A&M University*, $375k ($125K/year) for CDMS activities (note that this was reduced because of Operations funding below)
- Fall 2020–Fall 2021: SuperCDMS Operations Computing, Research Scientist support, $202.7k
- Fall 2020–Fall 2021: Mitchell Institute Funds for High Energy Physics, $76k for Mitchell Institute Computing ($38k) and DUNE-neutrino physics ($38k)
- Spring 2020–Spring 2024: U.S. DOE, *QPix: Achieving kiloton scale pixelated readout for Liquid Argon Time Projection Chambers* (neutrino physics). $158k
- Fall 2019–Fall 2023: U.S. DOE, *Photon Coupling to Superconducting Quasiparticle-Sensitive Sensors and Qubits* (quantum computing), $258k
- Fall 2019–Fall 2020: SuperCDMS Operations Computing, Research Scientist support, $202.7k
- April 2018–March 2021: U.S. DOE, *High Energy Physics at Texas A&M University*, $645k ($215K/year) for CDMS activities
- Fall 2019–Fall 2020: Mitchell Institute Funds for High Energy Physics, $76k for Grid Computing ($30k) and Dark Matter search at the TAMU Cyclotron ($43k)
- Summer 2019–Summer 2020: LUX/LZ Computing Operations, Graduate student support $18,410
- Fall 2018–Fall 2019: Mitchell Institute Funds for High Energy Physics, $76k for Mitchell Institution Computing ($35k) and CDMS Test Stand support ($26k) and Dark Matter search at the TAMU Cyclotron ($15k)
- Fall 2017–Fall 2018: Mitchell Institute Funds for High Energy Physics, $36k for Grid Computing ($20k) and CDMS Test Stand support ($16k)
- April 2017–March 2018: U.S. DOE, *High Energy Physics at Texas A&M University*, $195K for CDMS activities
- Fall 2016–Fall 2017: Mitchell Institute Funds for High Energy Physics, $30k for Grid Computing (hardware and student support)

- April 2016–March 2017: U.S. DOE, *High Energy Physics at Texas A&M University*, $195K for CDMS activities
- April 2015–March 2016: U.S. DOE, *High Energy Physics at Texas A&M University*, $175K for CDMS activities
- Fall 2015–Fall 2016: Mitchell Institute Funds for High Energy Physics, $50k for Grid Computing (hardware and student support) and $12k for a postdoc for CDMS Analysis and SuperCDMS Project
- October 2015-June 2015: URA Visiting Scholars Program for Jorge Morales *Testing, Developing, and Calibrating the Data Acquisition Electronics and Software for the SuperCDMS SNOLAB at Fermilab*, $10k, with $5k matching from Texas A&M University
- January 2015-December 2015: CDF Project Funds to *Legacy Measurements of the Forward-Backward Asymmetry of top-antitop pair production at CDF*, $12.5K, with $5k matching from Texas A&M University
- November 2014-June 2015: LSST Project Funds to *Graduate Student Support from SLAC National Accelerator Laboratory*, $16K, with $3k matching from Texas A&M University
- Fall 2014-Fall 2015: Mitchell Institute Funds for High Energy Physics, $30k for CDMS Analysis and $15k for Grid Computing
- June 2014-June 2015: CDF Project Funds to *Legacy Measurements in the lepton+Jets and dilepton channels of the Forward-Backward Asymmetry of top-antitop pair production at CDF*, $10K, with $4.5k matching from Texas A&M University
- April 2014-October 2014: URA Visiting Scholars Program for Dr. Jon Wilson *Creating Data Acquisition Electronics and Software for the SuperCDMS Experiment at Fermilab*, $18k, with $5k matching from Texas A&M University
- April 2014-March 2015: U.S. DOE, *High Energy Physics at Texas A&M University*, $190K for CDF and CDMS activities
- May 2013-March 2014: U.S. DOE, *High Energy Physics at Texas A&M University*, $161K for CDF and CMS activities
- Fall 2013-Fall 2014: Mitchell Institute Funds for High Energy Physics, $30k for Grid Computing
- Fall 2013-Fall 2014: Mitchell Institute Funds for High Energy Physics (Co-P.I. with Mahapatra), $75k for CDMS students/postdocs and $80k for detector fabrication.
- January 2013-June 2014: CDF Project Funds to *Legacy Measurements in the lepton+Jets and dilepton channels of the Forward-Backward Asymmetry of top-antitop pair production at CDF*, $25K, with $28k matching from Texas A&M University
- September 2012-August 2013: CDF Project Funds to *Convene the CDF Combined Top Quark Physics + Beyond the Standard Model Physics Groups*, $4K
- May 2012-April 2013: U.S. DOE, *High Energy Physics at Texas A&M University*, $184.5K for CDF and CMS activities

- Sept 2011-August 2012: URA Visiting Scholars Program for Vaikunth Thukral *Search for Single Higgs Production and Decay into Long-Lived Supersymmetric Particles in GMSB Scenarios at CDF*, $20,249
- January 2012-July 2012: CDF Project Funds for *Supporting CDF Run II Operations by the Texas A&M Group*, $39.8K
- January 2012-August 2012: CDF Project Funds to *Convene the CDF Combined Top Quark Physics + Beyond the Standard Model Physics Groups*, $5K
- October 2011-November 2011: CDF Project Funds for *Supporting CDF Run II Operations by the Texas A&M Group*, $8K
- September 2011-May 2012: U.S. DOE, High Energy Physics Supplement for CDF activities, $38K
- May 2011: Texas A&M College of Science Funds for *Matching for DOE Collider Physics Grid Computing Funds*, $10K
- May 2011-April 2012: U.S. DOE, *High Energy Physics at Texas A&M University*, $577K for all of Collider Physics with $190K being my portion
- April 2011-March 2012: CDF Project Funds to *Convene the CDF/Supersymmetry and Very Exotics Physics Working Groups*, $3K
- February 2011-January 2012: CDF Project Funds for *Supporting CDF Run II Operations by the Texas A&M Group*, $30K
- July 2010-September 2012: Norman Hackerman Advanced Research Program, *Discovery of Dark Matter using High Performance Computing and LHC Data at Texas A&M*, $100k
- May 2010-April 2011: U.S. DOE, *High Energy Physics at Texas A&M University*, $568K for all of Collider Physics with $241K being my portion
- December 2009-November 2010: CDF Project Funds for *Supporting CDF Run II Operations by the Texas A&M Group*, $30K
- Oct 2009: U.S. Department of Energy, American Recovery and Reinvestment Act funding, CMS Tier 3 Computing funds, $45K (Co-PI with Kamon)
- April 2009-March 2011: CDF Project Funds to *Convene the CDF/Supersymmetry Physics Working Group*, $10K
- May 2009-April 2010: U.S. DOE, *High Energy Physics at Texas A&M University*, $477.1K for Task A, $328.1K for all of Collider Physics with $164.0K being my portion
- December 2008-November 2009: CDF Project Funds for *Supporting CDF Run II Operations by the Texas A&M Group*, $30K
- June 2008-September 2008: CDF Project Funds for *Supporting CDF Run II Operations by the Texas A&M Group*, $12K
- May 2008-April 2009: U.S. DOE, *High Energy Physics at Texas A&M University*, $480K for Task A, $328K for all of Collider Physics with $164K being my portion

- May 2007-April 2008: U.S. DOE, *High Energy Physics at Texas A&M University*, $492K for Task A, $340K for all of Collider Physics with $170K being my portion
- April 2007-May 2007: CMS Project Funds for *HCal and L1 Commissioning for the CMS Detector at CERN*, ≈$25K
- March 2007-March 2009: CDF Project Funds to *Convene the CDF/Supersymmetry Physics Working Group*, $20K
- January 2007-August 2007: CDF Project Funds for *Supporting CDF Run II Operations by the Texas A&M Group*, $24,891
- June 2006-August 2006: Texas A&M Office of the Vice-President for Research Funds for *Win-Win PC-Based Grid Computing: Compute-Intensive Research, Student Computing, and a Grid-Capable Workstation*, $20K
- May 2006-April 2007: U.S. DOE, *High Energy Physics at Texas A&M University*, $477K for Task A, $325K for all of Collider Physics with $162.5K being my portion
- May 2006: Texas A&M College of Science Funds for *Matching for DOE High Energy Physics Research Computing Funds*, $7K (with T. Kamon)
- May 2005-April 2006: U.S. DOE, *High Energy Physics at Texas A&M University*, $413K for Task A, $258.4K for all of Collider Physics with $120K being my portion
- May 2004-April 2005: U.S. DOE, *High Energy Physics at Texas A&M University*, $383K for Task A, $220K for all of Collider Physics with $73.5K being my portion
- May 2003-April 2004: U.S. DOE, *High Energy Physics at Texas A&M University*, $375K for Task A, $225K for all of Collider Physics with $75K being my portion

Supervision of Research Students and Postdocs[4]

- *Postdoctoral Students and Research Scientists:*
  Dr. Michael Kelsey (Research Scientist), Fall 2019–Present
  Dr. Jon Wilson, Jan 2014-Fall 2019
  Currently, Postdoc on CDMS at Baylor University
  Dr. Jason Nett, August 2010-July 2013
  Currently Technical Staff, Row 44
  Dr. Daniel Goldin, September 2009-December 2011
  Currently Staff Scientist, Science Systems and Applications Inc.
  Dr. Michael Weinberger, January 2006-December 2008
  Currently Research Analyst, TradeLink LLC
  Dr. Maxim Goncharov, June 2001-August 2008 (Co-supervised)
  Currently Research Scientist, MIT
  Dr. Sungwon Lee, January 2001-August 2005 (Co-supervised)
  Currently Full Professor/Department Head, Texas Tech

- *Ph.D. Students (Dissertation chair):*
  Dylan Monteiro, Summer 2024 – Present
  Wade Lamberson, Spring 2024 – Present
  Nolan Tenpas, Fall 2022–Present
  Carter Eikenbary, Fall 2021–Present (M.S. 2023)
  Rik Bhattacharyya, Fall 2019–Present
  Iman Ataee, Fall 2018–Present (M.S. 2021)
  Dave Elofson, Fall 2018–Present (M.S. 2021)
  Lei Zheng, Fall 2017–Present
  Richard Lawrence, Fall 2016–Present (M.S. 2018)
  Currently User Support Specialist at Texas A&M University HPRC
  Josh Winchell, Fall 2016– Spring 2023 (M.S. 2018, PhD 2023)
  Currently User Support Specialist at Texas A&M University HPRC
  Elham Azadbahkt, Fall 2016–Present (M.S. 2019, PhD 2022)
  Currently Algorithm developer at D-Wave
  Jorge Morales, Fall 2012-Present (M.S. 2014, PhD 2019)
  Named University Research Association (URA) Visiting Scholar to Fermilab (Fall 2015)
  Travel Award to the Workshop on Germanium-Based Detectors (Summer 2012)
  Postdoc at SLAC, now works at Google
  Ziqing Hong, Spring 2011-Fall 2015 (M.S. 2013, PhD 2015)
  Bush Library Graduate Student Travel Award (Spring 2015)
  Young Scientist Forum Travel award for the LaThuile Conference (Spring 2014)
  Travel Award to the New Perspectives Conference (Spring 2012)
  Currently Assistant Professor, University of Toronto
  Adam Aurisano, Summer 2004-Fall 2012 (M.S. 2007, Ph.D. 2012)
  Presentation Competition Award, Texas Section of the APS (2004)
  Currently Associate Professor, University of Cinncinati

[4]Note: All students are from Texas A&M University unless otherwise noted. All awards are physics research awards from regional or national organizations, unless noted as an international award. Students I supervised (and their awards) on scholarly teaching activities, such as web-based materials, course and textbook development, are listed separately. This list is given in both the main CV as well as my Teaching CV for completeness.

Jonathan Asaadi, Summer 2004-Fall 2012 (M.S. 2007, Ph.D. 2012)
2nd Place, presentation competition, Texas A&M Student Research Week (2008)
Currently Associate Professor Univ. of Texas at Arlington
Eunsin Lee, Summer 2004-May 2010 (M.S. 2006, Ph.D. 2010)
3rd Place, presentation competition, Texas A&M Student Research Week (2007)
Presentation competition Award, Texas Section of the APS (2006)
Was Assistant Professor at Univ. of Cincinnati, now Associate Professor at the Ohio State University
Peter Wagner, August 2001-August 2007 (Ph.D. 2007)
Co-Winner, Thesis Award for 2007 from the *University Research Association,*
International award for most outstanding thesis from a project on a Fermilab Experiment
Currently Researcher, Bonn University

- *Masters Students (Committee Chair):*
Ben Meleton, Fall 2022– Fall 2024 (M.S. 2024)
McKay Osborne, Fall 2017–Summer 2024 (M.S. 2021)
Nathanial Herbert, Fall 2016-Summer 2019 (M.S. 2019)
Katrina Colletti, Summer 2014-Summer 2016 (M.S. 2016)
Xuji Zhao, Summer 2014-2018 (M.S. 2015)
Sean Yeager, Summer 2012-Fall 2013 (M.S. 2013)
Currently Adjunct Faculty, University of Portland
Daniel Cruz, Summer 2010-Summer 2013 (M.S. 2012)
Currently Support Engineer, Intergraph Corporation
Vaikunth Thukral, Fall 2009-Spring 2016 (M.S. 2011)
Named University Research Association (URA) Visiting Scholar to Fermilab (Spring 2012)
Currently Computing Scientist, Stanford Linear Accelerator Center
Michael Mason, Fall 2008-Spring 2009, Summer 2010-Fall 2010 (M.S. 2011)
Currently Scientist II, Los Alamos National Laboratory
David Maffei, Summer 2003-December 2006 (M.S. 2006)
Matthew Cervantes, Summer 2002-August 2006 (M.S. 2006)

- *Graduate Students (Masters or Ph.D. committee member or co-chair):*
Paul Terman (Webb), Fall 2013–Summer 2020 (PhD 2020)
Rachel Mannino (Webb), Fall 2013-Spring 2017 (PhD 2017)
Kunj Prasad (Mahapatra), Fall 2013 (Ph.D. 2013)
Roy Montalvo (Kamon), Fall 2011-Fall 2012 (Ph.D. 2013)
Nathaniel Pogue (McIntyre), Spring 2006-Spring 2011 (Ph.D. 2011)
Masaki Watabe (Webb), Spring 2004-Fall 2009 (Ph.D. 2010)
Sourabh Dube (Rutgers, Somalwar), Spring 2008-Fall 2008 (Ph.D. 2008)
Vadim Khotilovich (Kamon), Fall 2001-Spring 2008 (Ph.D. 2008)
Slava Krutelyov (Kamon), Fall 2000-December 2005 (Ph.D. 2005, co-chair)

- *Undergraduates:*
Warren Perry, Summer 2020–Summer 2023
Currently Graduate Student University of Toronto
Yasin Alam, Summer 2019–Spring 2023
Currently Graduate Student University of Texas
James 'Reed' Watson, Spring 2014-2018

PhD, University of California at Berkeley (2022)
Sarah Henry, Spring 2013-Spring 2015
PhD, Rochester University (2021)
Randy White (Honors Thesis Student), Fall 2012-2016
Honors Thesis 2015
Bush Library Graduate Student Travel Award (Spring 2015)
Presentation Competition Award, Texas Section of the APS (2014)
Chris Davis (Honors Thesis Student), Summer 2010-2013
Honors Thesis (2013)
Winner 2nd place, Oral Competition, Student Research Week, March 2012
PhD, Yale University (2019)
David Rahmani, January 2008-Spring 2009
NASA Astronaut Scholarship Foundation Award (2009)
Paul Geffert (Honors Thesis Student), January 2006-Spring 2009
Honors Thesis (2008)
Winner, Gathright Scholar Academic Excellence Award, TAMU College of Science (2009)
PhD, University of California at Santa Barbara (2014)
Paul Simeon (Honors Program Student), January 2004-Summer 2006
Winner, Goldwater Scholarship, (2007)
PhD, Stanford University (2014)
Christopher Battle, January 2001-September 2002
Jeffrey Gaspard, April 2001-June 2002
Winner, presentation competition, Texas Section of the APS (2001)
Julian Londoño, January 2001-May 2001
Thomas Landers, University of Maryland, Summer 1999
John Peterson, University of Chicago, May 1997

PUBLICATIONS[5]

A) Primary Author/Data Analyzer

1. G4CMP: CONDENSED MATTER PHYSICS SIMULATION USING THE GEANT4 TOOLKIT
   M. H. Kelsey *et al., Nucl. Instrum. Methods* A, 1055, 168473 (2023)

2. THE LEVEL-1 TRIGGER FOR THE SUPERCDMS EXPERIMENT AT SNOLAB
   J S. Wilson *et al., Journal of Instrumentation,*, 17 P07010 (2022)

3. HIGH-PRECISION MEASUREMENT OF THE W BOSON MASS WITH THE CDF II DETECTOR
   T. Aaltonen *et al.* (CDF Collaboration), *Science* **376**, 170 (2022)

4. COMBINED FORWARD-BACKWARD ASYMMETRY MEASUREMENTS IN TOP-ANTITOP QUARK PRODUCTION AT THE TEVATRON
   T. Aaltonen *et al.* (CDF and D0 Collaborations), *Phys. Rev. Lett.* **120**, 042001 (2018)

5. MEASUREMENT OF THE FORWARD-BACKWARD ASYMMETRY OF TOP-QUARK AND ANTIQUARK PAIRS USING THE FULL CDF RUN II DATA SET
   T. Aaltonen *et al.* (CDF Collaboration), *Phys. Rev.* D **93**, 112005 (2016)

6. EXTRAPOLATION TECHNIQUE PITFALLS IN ASYMMETRY MEASUREMENTS AT COLLIDERS
   K. Colletti, Z. Hong, D. Toback and J. S. Wilson, *Nucl. Instrum. Methods* A **830**, 176 (2016)

7. REVIEW OF THE PHYSICS RESULTS FROM THE TEVATRON: SEARCHES FOR NEW PARTICLES AND INTERACTIONS
   D. Toback and L. Zivkovic, *International Journal of Modern Physics A* **30**, 1541007 (2015)

8. MEASUREMENT OF THE INCLUSIVE LEPTONIC ASYMMETRY IN TOP-QUARK PAIR EVENTS THAT DECAY TO TWO CHARGED LEPTONS AT CDF
   T. Aaltonen *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **113**, 042001 (2014)

9. FORWARD-BACKWARD ASYMMETRY OF LEPTONIC DECAYS OF $t\bar{t}$ AT THE FERMILAB TEVATRON
   Z. Hong, R. Edgar, S. Henry, D. Toback, J. Wilson and D. Amidei, *Phys. Rev.* D **90**, 014040 (2014)

10. SIGNATURE-BASED SEARCH FOR DELAYED PHOTONS IN EXCLUSIVE PHOTON PLUS MISSING TRANSVERSE ENERGY EVENTS FROM $P\bar{P}$ COLLISIONS with $\sqrt{s} = 1.96$ TeV
    T. Aaltonen *et al.* (CDF Collaboration), *Phys. Rev.* D-RC **88**, 031103 (2013)

11. PROSPECTS FOR MEASURING THE MASS OF HEAVY, LONG-LIVED NEUTRAL PARTICLES THAT DECAY TO PHOTONS
    Z. Hong and D. Toback, *Journal of HEP* **09**, 041 (2013)

12. PROSPECTS OF SEARCHES FOR GAUGE MEDIATED SUPERSYMMETRY WITH $h^0 \to \tilde{\chi}_1^0\tilde{\chi}_1^0$ PRODUCTION IN THE TIME-DELAYED PHOTON+$\not{E}_{\rm T}$ FINAL STATE AT THE TEVATRON
    J. D. Mason and D. Toback, *Phys. Lett. B* **702**, 377 (2011)

[5]These are physics publications only. They include experimental results, phenomenology results, technical papers, as well as reviews. Teaching related publications are listed separately.

13. THE LARGE HADRON COLLIDER ENTERS THE RACE FOR SUPERSYMMETRY
D. Toback, *Phys. Rev. Lett. Viewpoint, Physics* **4**, 27 (2011)

14. SEARCH FOR SUPERSYMMETRY WITH GAUGE-MEDIATED BREAKING IN DIPHOTON EVENTS WITH MISSING TRANSVERSE ENERGY AT CDF II
T. Aaltonen *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **104**, 011801 (2010)

15. COSMO-PARTICLE SEARCHES FOR SUPERSYMMETRY AT THE COLLIDER DETECTOR AT FERMILAB
D. Toback, *Modern Physics Letters A*, Vol 24, No. 38, 3063 (2009)

16. SEARCH FOR HEAVY, LONG-LIVED NEUTRALINOS THAT DECAY TO PHOTONS AT CDF II USING PHOTON TIMING
T. Aaltonen *et al.* (CDF Collaboration), *Phys. Rev.* D **78**, 032015 (2008)

17. DETERMINING THE DARK MATTER RELIC DENSITY IN THE MSUGRA $\tilde{\tau} - \tilde{\chi}_1^0$ CO-ANNIHILATION REGION WITH THE LHC
R. Arnowitt, B. Dutta, A. Gurrola, T. Kamon, A. Krislock and D. Toback, *Phys. Rev. Lett.* **100**, 231802 (2008)

18. SEARCH FOR HEAVY, LONG-LIVED PARTICLES THAT DECAY TO PHOTONS AT CDF II
A. Abulencia *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **99**, 121801 (2007)

19. INDIRECT MEASUREMENTS OF THE $\tilde{\tau} - \tilde{\chi}_1^0$ MASS DIFFERENCE AND $M_{\tilde{g}}$ IN THE CO-ANNIHILATION REGION OF MSUGRA MODELS AT THE LHC
R. Arnowitt, A. Aurisano, B. Dutta, T. Kamon, N. Kolev, D. Toback, P. Simeon and P. Wagner, *Phys. Lett. B* **649**, 73 (2007)

20. THE TIMING SYSTEM FOR THE CDF ELECTROMAGNETIC CALORIMETERS
M. Goncharov *et al.*, *Nucl. Instrum. Methods* A **565**, 543 (2006)

21. DETECTION OF SUSY IN THE STAU-NEUTRALINO CO-ANNIHILATION REGION AT THE LHC
R. Arnowitt, B. Dutta, T.Kamon, N. Kolev and D. Toback, *Phys. Lett. B* **639**, 172 (2006)

22. COMBINATION OF CDF AND DØ LIMITS ON A GAUGE MEDIATED SUSY MODEL USING DIPHOTON AND MISSING TRANSVERSE ENERGY CHANNEL
V. Buescher *et al.* (CDF and DØ Collaborations), hep-ex/0504004

23. SEARCH FOR ANOMALOUS PRODUCTION OF DIPHOTON EVENTS WITH MISSING TRANSVERSE ENERGY AT CDF AND LIMITS ON GAUGE MEDIATED SUPERSYMMETRY BREAKING MODELS
D. Acosta *et al.* (CDF Collaboration), *Phys. Rev.* D **71**, 031104 (2005)

24. PROSPECTS OF SEARCHES FOR NEUTRAL, LONG-LIVED PARTICLES THAT DECAY TO PHOTONS USING TIMING AT CDF
D. Toback and P. Wagner, *Phys. Rev.* D **70**, 114032 (2004)

25. PROSPECTS OF SEARCHING FOR EXCITED LEPTONS DURING RUN II OF THE FERMILAB TEVATRON
E. Boos, A. Vologdin, D. Toback and J. Gaspard, *Phys. Rev.* D **66**, 013011 (2002)

26. SEARCH FOR NEW HEAVY PARTICLES IN THE WZ^0 FINAL STATE IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
T. Affolder *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **88**, 071806 (2002)

27. A QUASI-MODEL-INDEPENDENT SEARCH FOR NEW HIGH P_T PHYSICS AT DØ
B. Abbott *et al.* (DØ Collaboration), *Phys. Rev.* D **64**, 012004 (2001)

28. A QUASI-MODEL-INDEPENDENT SEARCH FOR NEW HIGH P_T PHYSICS AT DØ
B. Abbott *et al.* (DØ Collaboration), *Phys. Rev. Lett.* **86**, 3712 (2001)

29. SEARCH FOR NEW PHYSICS IN $e\mu X$ DATA AT D0 USING SLEUTH: A QUASI MODEL INDEPENDENT SEARCH STRATEGY FOR NEW PHYSICS
B. Abbott *et al.* (DØ Collaboration), *Phys. Rev.* D **62**, 092004 (2000)

30. SEARCHES FOR NEW PHYSICS IN DIPHOTON EVENTS IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
F. Abe *et al.* (CDF Collaboration), *Phys. Rev.* D **59**, 092002 (1999)

31. SEARCHES FOR NEW PHYSICS IN DIPHOTON EVENTS IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
F. Abe *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **81**, 1791 (1998)

B) Major Author/Data Analyzer

1. PROJECTED SENSITIVITY OF THE SUPERCDMS SNOLAB EXPERIMENT
R. Agnese *et al.* (SuperCDMS Collaboration), *Phys. Rev.* D **95**, 082002 (2017)

2. COMBINATION OF CDF AND DØ RESULTS ON W BOSON MASS AND WIDTH
V.M. Abazov *et al.* (CDF and DØ Collaborations), *Phys. Rev.* D **70**, 092008 (2004)

3. SEARCH FOR PAIR PRODUCTION OF SCALAR TOP QUARKS IN R-PARITY VIOLATING DECAY MODES IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
D. Acosta *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **92**, 051803 (2004)

4. SEARCH FOR NEW PHYSICS IN PHOTON LEPTON EVENTS IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
D. Acosta *et al.* (CDF Collaboration), *Phys. Rev.* D **66**, 012004 (2002)

5. SEARCH FOR NEW PHYSICS IN PHOTON LEPTON EVENTS IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
D. Acosta *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **89**, 041802 (2002)

6. SEARCHES FOR NEW PHYSICS IN EVENTS WITH A PHOTON AND B-QUARK JET AT CDF
D. Acosta *et al.* (CDF Collaboration), *Phys. Rev.* D **65**, 052006 (2002)

7. SEARCH FOR GLUINOS AND SQUARKS USING LIKE-SIGN DILEPTONS IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
T. Affolder *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **87**, 251803 (2001)

8. SEARCH FOR SECOND GENERATION LEPTOQUARK PAIRS IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
B. Abbott *et al.* (DØ Collaboration), *Phys. Rev. Lett.* **84**, 2088 (2000)

9. EXTRACTION OF THE WIDTH OF THE W BOSON FROM MEASUREMENTS OF $\sigma\ (p\overline{p} \rightarrow W + X) \cdot B(W \rightarrow e\nu)$ AND $\sigma(p\overline{p} \rightarrow Z + X) \cdot B(Z \rightarrow ee)$ AND THEIR RATIO
B. Abbott *et al.* (DØ Collaboration), *Phys. Rev.* D **61**, 072001 (2000)

10. SEARCH FOR A TECHNICOLOR ω_{T} PARTICLE IN EVENTS WITH A PHOTON AND A B QUARK JET AT CDF
F. Abe *et al.* (CDF Collaboration), *Phys. Rev. Lett.* **83**, 3124 (1999)

11. SEARCH FOR SECOND GENERATION LEPTOQUARK PAIRS DECAYING TO MUON NEUTRINO + JETS IN $p\overline{p}$ COLLISIONS AT $\sqrt{s}\ =\ 1.8$ TEV
B. Abbott *et al.* (DØ Collaboration), *Phys. Rev. Lett.* **83**, 2896 (1999)

12. SEARCH FOR LONGLIVED PARENTS OF Z^0 BOSONS IN $p\overline{p}$ COLLISIONS AT $\sqrt{s} = 1.8$ TEV
F. Abe *et al.* (CDF Collaboration), *Phys. Rev.* D **58**, 051102 (1998)

C) Other

I am listed on all CDF publications from 1992-1998 and 2001-present, all DØ publications from 1998-2000, all CMS publication from 2009-2015, and all CDMS publications from 2015-present. This is typically between 20 and 40 peer reviewed publications per year. A complete list is available upon request.

Colloquia, Seminars, and Conference Talks[6]

Note: High Energy experiments, such as CDF, CDMS and CMS, are a collaborative effort. New results are often presented in plenary talks at conferences by individuals who are summarizing the work of many scientists. The collaboration decides who give the talks and preference in selection is given to junior scientists to give the talk to help them get a job. For this reason, my work is usually presented by others, in particular by my students and postdocs far more often than by me. Also, work-in-progress is rarely presented except in large internal meetings to the collaborations. I list here only formal talks I have given. A list of talks by my students, postdocs or colleagues for the last three years is presented in the next section.

- "One man's thoughts a year after the CDF W Mass Announcement"
  The Mitchell Conference on Collider, Dark Matter and Neutrino Physics 2023, May 2023
- "High-Precision Measurement of the W Boson Mass with the CDF II Detector"
  The Mitchell Conference on Collider, Dark Matter and Neutrino Physics 2022, May 2022
- "Introductory Remarks: High precision measurement of the W-boson mass with the CDF II detector"
  Fermilab Joint Experimental - Theoretical Seminar, April 2022
- "Simulation of Dark Matter and Standard Model Interactions in the SuperCDMS Soudan Experiment," Department Seminar
  University of South Dakota, November 2019
- "Big Computing in High Energy Physics," Symposium on Data Harnessing
  University of South Dakota, November 2019
- "Big Computing in High Energy Physics," Second Annual Research Computing Symposium
  Texas A&M, June 2018
- "Big Computing in High Energy Physics", Big Data Workshop
  Texas A&M, College of Science, April 2018
- "Top Production at the Fermilab Tevatron: Spin Correlations, Polarization and Forward-Backward Asymmetries," Invited Talk
  Rencontres de Moriond (Moriond QCD 2016), March 2016 :
- "Measurment of the Forward-Backward Asymmetry of ttbar at the Fermilab Tevatron," High Energy Seminar
  INFN-Pisa, March 2016
- "Big Computing in High Energy Physics," Big Data Workshop
  Texas A&M, College of Science, January 2016
- "Measurment of the Forward-Backward Asymmetry of ttbar at the Fermilab Tevatron", HEP Seminar
  University of Chicago, November 2015
- "Cosmology and Particle Physics", Department Colloquium
  Texas Tech University, March 2015

[6] These are physics talks only. Teaching related talks are listed separately.

- "Big Computing and the Mitchell Institute for Fundamental Physics and Astronomy,"
  Texas A&M Big Data Workshop, February 2015

- "CDF Legacy Results/2014 and Future," Fermilab Joint Experimental-Theoretical Physics Seminar (Wine & Cheese)
  Fermilab, December 2014

- "Collider Physics: Supersymmetry at Fermilab Tevatron and the Large Hadron Collider," Invited talk, Memorial Symposium in honor of Dr. Richard Arnowitt
  Texas A&M University, September 2014

- "Tevatron Physics," Fermilab Users Meeting
  Fermilab, June 2014

- "New Particle and Interaction Searches at CDF: BSM Higgs, Top and SUSY," Lake Louise Winter Institute (LLWI 2013), Invited Talk
  Lake Louise, Canada, February 2013

- "Measurements of the Top Quark Charge Asymmetry at CDF," Conference on the Interface of Particle And Nuclear Physics (CIPANP 2012), Invited Talk
  St. Petersburg, Florida, June 2012

- "Top Quark Properties," Conference on the Interface of Particle And Nuclear Physics (CIPANP 2012), Invited Talk
  St. Petersburg, Florida, June 2012

- "Gauge Mediated SUSY and the Higgs at the Tevatron," Conference on the Interface of Particle And Nuclear Physics (CIPANP 2012)
  St. Petersburg, Florida, June 2012

- "Fun Things to Watch for During a Football Game... Physics in Motion," 7^{th} Annual International Aggie Football Symposium
  Texas A&M University, Oct 2011

- "The Big Bang, Dark Matter and Searching for New Particles at the Large Hadron Collider (LHC)," Public Lecture
  Adult Education Series, Congregation Beth Shalom, April 2011
  Keynote Speech, Davidson Scholars (Texas A&M), March 2011
  Keynote Speech, Texas Junior Science and Humanities Symposium (Texas A&M), January 2011

- "Dark Matter: Inquiring Minds Want to Know," Public Lecture
  The Teaching Company, February 2011

- "Particle Physics and Cosmology," Astronomy Symposium
  Texas A&M University, Aug 2010

- "The Search for Supersymmetry at CDF in the LHC Era," HEP Seminar
  Harvard University, April 2010

- "Searching for the Particles of the Early Universe," Department Colloquium
  Sam Houston State University, Jan 2010
  University of Illinois at Chicago, Nov 2009

University of Hawaii, Nov 2009
Texas A&M University, Oct 2009

- "Big Bang, Black Holes, No Math: PHYS/ASTR 109 at Texas A&M," Physics-Astronomy-Cosmology Seminar
  Texas A&M University, Nov 2009

- "Hadron Collider Results Impacting Particle Astrophysics," Two Lectures at the 3$^{\text{rd}}$ International Summer School on Astroparticle Physics (Nijmegen '09)
  Nijmegen, The Netherlands, August 2009

- "Status of the Searches for GMSB SUSY in Photon Final States:," HEP Seminar
  Texas A&M University, July 2009

- "Physics Beyond the Standard Model," American Physical Society April Meeting (APS 2009)
  Denver Colorado, May 2009

- "The Search for Supersymmetry at CDF," HEP Seminar
  Cornell University, April 2009
  Rochester University, April 2009
  Baylor University, March 2009
  University of California at Los Angeles, February 2009
  University of California at Santa Barbara, February 2009
  Stanford University/Stanford Linear Accelerator Laboratory, February 2009
  Rice University, January 2009
  University of California at Berkeley/Lawrence Berkeley National Laboratory, December 2008

- "Searches using Photons and/or Jets at CDF," The 18$^{\text{th}}$ Particle and Nuclei International Conference (PANIC 2008)
  Eilat Israel, November 2008

- "The Search for Supersymmetry and Beyond the Standard Model Physics at the Fermilab Tevatron," The 4$^{\text{th}}$ International Conference Dedicated to the Physics at LHC (Physics at LHC 2008)
  Split Croatia, September 2008

- "Measuring the Dark Matter Relic Density at the LHC," The 34$^{\text{th}}$ International Conference on High Energy Physics (ICHEP 2008)
  University of Pennsylvania, July 2008

- "Dark Matter in SUGRA models and the LHC," The 15$^{\text{th}}$ International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2007)
  Karlsruhe Germany, July 2007

- "Particle Physics and Cosmology in the Co-Annihilation Region," International Workshop on the Interface of Particle Physics and Cosmology (PPC 2007)
  Texas A&M University, May 2007

- "Searching for New Particles at Colliders," High Energy Theory Seminar
  Texas A&M University, February 2006

- "Collider Physics at Texas A&M," HEP Seminar
  Texas Tech University, August 2005

- "Searches for New Physics Using Photons at the Tevatron," HEP Seminar
  University of Florida, May 2005
  University of Wisconsin, March 2005

- "Searching for New Physics at the Fermilab Tevatron," Department Colloquium
  Texas A&M University, October 2004
  The State University of New York at Buffalo, November 2004

- "Run II Searches for Supersymmetry," 15^{th} International Topical Conference on Hadron Collider Physics (HCP 2004)
  Michigan State University, June 2004

- "Searching for New Physics with Photon and Missing Energy at CDF: Recent Results, Upgrades and Prospects," HEP Seminar
  Texas A&M University, May 2004
  University of Chicago June 2004

- "Searching for New Physics at the Fermilab Tevatron," Department Colloquium
  Texas A&M University, September 2002

- "Model Independent Searches using Final State Photons at CDF and DØ," HEP Seminar
  University of Maryland, April 2002
  Texas A&M University, May 2002

- "On Events with Leptons and Photons at CDF," HEP Seminar
  Texas A&M University, March 2002

- "Searching for New Physics at the Fermilab Tevatron," HEP Seminar
  University of Texas at Austin, May, 2001

- "Sleuth: A Quasi-Model-Independent New Physics Search Strategy," HEP Seminar
  University of Maryland, September 2000

- "Searching for New Physics at the Fermilab Tevatron," Department Colloquium
  Texas A&M University, May, 2000

- "New Phenomena II: Recent Results from the Fermilab Tevatron," 35^{th} Rencontres de Moriond: Electroweak Interactions and Unified Theories (Moriond/EWK 2000)
  Les Arcs, France, March 2000

- "CDF Searches for New Phenomena," 12^{th} Les Rencontres de Physique de la Vallee d'Aoste: Results and Perspectives in Particle Physics (La Thuile 1998)
  La Thuile, Italy, March 1998

- "Searches for New Physics in Diphoton + X events at CDF," HEP Seminar
  Argonne National Laboratory, January 1998
  University of Chicago, December 1997
  Duke University, November 1997
  University of Pennsylvania, October 1997
  The Johns Hopkins University, September 1997
  University of Maryland, August 1997
  Fermilab National Accelerator Laboratory, August 1997

- "Diphoton Missing E_T Distribution at CDF," Annual Divisional Meeting of the Division of Particles and Fields of the American Physical Society (DPF 1996)
  University of Minnesota, August 1996
- "Search for Technicolor in the W+Jet-Jet Decay Channel," TeV33 Conference
  Fermilab, May 1996
- "Search for W' in the W + Jet-Jet Decay Channel," American Physical Society Meeting (APS 1996)
  Indianapolis, May 1996
- "Search for W' in the W + Jet-Jet Decay Channel," HEP Seminar
  University of Chicago, May 1996
- "Search for W' in the W + Jet-Jet Decay Channel," American Physical Society Meeting (APS 1995)
  Washington D.C., May 1995

Public and Outreach Talks

- "Big Bang and Dark Matter on a Sunday Afternoon," Invited Outreach Talk
  North Alabama Mensa, April 2021
- "High energy physics: The most fundamental questions, the biggest and coolest toys," Department of Physics and Astronomy Prospective Graduate Student Open House
  Texas A&M University, March 2021
  Texas A&M University, March 2018
- "What does Dark Matter have to do with the Big Bang Theory?, Invited Outreach Lecture
  Texas A&M Aggie Recruitment Committee: Whoopin' Weekend, March 2019
  Texas A&M Honors/Pasta and Prof Session, April 2018
  Gents of Texas A&M, March 2018
  Saturday Morning Physics Physics Lecture, March 2018
  Lunar Society of Waco, March 2016
  MSC Bethancourt Scholar Lecture Series, March 2016
  MSC Bethancourt Scholar Lecture Series (Inagural Lecture), October 2014
- "Celebrity, Wealth and Privilege are the Wrong Goals!," Invited Lecture
  Aggie Gentlemen of Integrity, April 2016
- "Einstein, Black Holes and Gravity Waves, oh my!," Invited Lecture
  Davidson Scholars, April 2016
  Society of Physics Student-TAMU Talk, February 2016
- "Dark Matter and the Big Bang," TedX TAMU Talk
  Texas A&M University, April 2015
- "Astronomy, Cosmology, Particle Physics and the Universe," Aerospace Engineering Seminar Series
  Texas A&M University, September 2014
- "College and Career Day," High School Talk
  Bryan Collegiate High School, May 2014

- "Dark Matter and the Big Bang Theory,"Saturday Morning Physics Public Lecture
  Texas A&M University, Jan 2014
- "Who wants to know a little about fun science stuff?" Middle School Meet a Scientist day
  Norton Elementary, April 2013
- "Scientists, The Big Bang and the Big Bang Theory," Honor's Undergrad Research Program Seminar (Pizza and Prof)
  Texas A&M University, February 2013
- "Fun Things to Watch for During a Football Game... Physics in Motion," Invited Lecture
  7th Annual International Aggie Football Symposium, Oct 2011
  5^{th} Annual International Aggie Football Symposium, Oct 2009
- "The Big Bang, Dark Matter and Searching for New Particles at the Large Hadron Collider (LHC)," Public Lectures
  Adult Education Series, Congregation Beth Shalom, April 2011
  Keynote Speech, Davidson Scholars (Texas A&M), March 2011
  Keynote Speech, Texas Junior Science and Humanities Symposium (Texas A&M), January 2011
- "Dark Matter: Inquiring Minds Want to Know", Public Lecture
  The Teaching Company, February 2011
- "A Big Bang Occurred... Then what?" Science Cafè, Public Lecture
  Bryan TX, June 2009
- "A Big Bang Occurred... Then what? The Story of the Universe since the Beginning," Invited Adult Education Public Lecture
  Congregation Beth Shalom, May 2009
- "LHC The $9 Billion Dollar Window to the Universe", Saturday Morning Physics Public Lecture
  Texas A&M University, Jan 2009

Teaching Curriculum Vitae[7]

Courses Taught (Texas A&M University, 2001-Present)

- *Big Bang and Black Holes* (Cosmology for non-majors, ASTR/PHYS 109)
  Texas A&M University, Spring 2007 - Fall 2007, Fall 2008 - Fall 2010, Fall 2011-Present
  - New type of course, Approved as a Tier 2 Science Distribution course
  - Laboratory methods component (ASTR/PHYS 119. also Tier 2 Science Distribution course), Fall 2010-Fall 2018
  - Textbook for both course, and companion lab manual, with Kendall-Hunt Press
  - Writing assignments using web-based Peerceptiv and and online quizzes using Canvas
  - Honors sections Spring 2010-Present
- *Introduction to Classical Mechanics* (Engineering track, Physics 218)
  Texas A&M University, Spring 2001-Spring 2005, Spring 2006 - Fall 2006, Spring 2008
  - Creator of multiple web-based teaching systems including the *Automated Mathematics Evaluation System (AMES)*, *Computerized Homework Assignment Grading System (CHAGS)* and *QUizzes Intended to Consolidate Knowledge (QUICK)* systems, Fall 2001-Spring 2012
  - Creator of the *Physics 218 Challenge Exam* and *Mechanics Scholars* Program, Spring 2002-Spring 2012
  - Course coordinator, Spring 2005
  - Participant in the *Visual Physics* interactive engagement learning program, Fall 2003-Fall 2006 (except Fall 2005)
  - Participant in the *STEPS* Math, Physics & Engineering Cohort program, Spring 2008

Teaching Publications and Presentations

- *Big Bang, Black Holes, No Math*, Textbook for Physics/Astronomy 109
  Kendall-Hunt Press 2013
- *Big Bang, Black Holes, No Math: Lab Manual*, Lab Manual for Physics/Astronomy 119
  Kendall-Hunt Press 2013
- *ASTR/PHYS 119: A Companion Course to ASTR/PHYS 109, "Big Bang and Black Holes"*
  Invited Astronomy Seminar, Texas A&M University, Nov 2010
- *Integrating Web-Based Teaching Tools into Large University Physics Courses,*
  D. Toback, A. Mershin and I. Novikova, *The Physics Teacher*, Vol 43, 595-598 (2005)
- *Integrating Web-Based Teaching Tools into Large University Physics Courses,*
  Invited talk at *Teaching with Technology 2006*, Texas A&M University, February 2006

[7] Teaching awards are not listed here

Teaching Funding

- Development Award as a *University Professor for Undergraduate Teaching Excellence* at Texas A&M University, $15,000 prize, 2012-2015
- Development Award as a *University Professor for Undergraduate Teaching Excellence* at Texas A&M University, $15,000 prize, 2008-2011
- Development Award as a *Montague Scholar* from the Center for Teaching Excellence at Texas A&M University for *Web-based Teaching for Physics Courses*, $5,000 prize, Fall 2002

Programs Developed

- Creator/administrator of the *Physics 218 Challenge Exam* and *Mechanics Scholars* Program
  Texas A&M University, Spring 2002-Spring 2012
  Program to select the Texas A&M University, Department of Physics *Mechanics Scholars*, and winners of the *Award for Exceptional Performance in Physics 218*
  Still involved as invited luncheon speaker

Teaching Tools Developed

- Creator/maintainer of the *Automated Mathematics Evaluation System (AMES)*
  Texas A&M University, Fall 2001-Spring 2012
  A web-based math quiz system for Physics 101 (Physics Majors Seminar), 201, 202, 208 and 218 (Mechanics and Electromagnetism, Pre-Med and engineering tracks) and Astronomy 314 (Introduction to Astronomy)
- Creator/maintainer of the *Computerized Homework Assignment Grading System (CHAGS)*
  Texas A&M University, Spring 2002-Spring 2012
  A web-based homework collection system for Physics 201, 202, 208 and 218
- Creator/maintainer of the *QUizzes Intended to Consolidate Knowledge (QUICK)*
  Texas A&M University, Spring 2002-Spring 2012
  A web-based homework quiz and mini-practice exam system for Physics 109, 208, 218, 289 and Astronomy 314

Teaching Service

Note: All activities are at Texas A&M University unless otherwise noted

- Sigma Xi Science Research Society Outstanding Communicator Award Selection Committee, Spring 2014
- Association of Former Students Distinguished Teaching Award Selection Committee, College-Level, Spring 2013
- Mitchell Institute Physics Enhancement Program presenter, Summer 2012-Present
- College of Science Core Curriculum Development Committee, Spring 2009
- Provost's Academic Master Plan's Teaching Roadmap Committee, Fall 2008-Fall 2009
- Association of Former Students Distinguished Teaching Award Selection Committee, University-Level, Spring 2008

- Reviewer for *The Physics Teacher* Journal, Fall 2007
- Association of Former Students Distinguished Teaching Award Selection Committee, College-Level, Spring 2005
- Graduate Mentor for Irina Novikova, Center for Teaching Excellence Fellows Program, Spring 2003
- Mechanics Scholar Selection Committee Chair, Department of Physics, Spring 2002-Present
- Gregor Wentzel Teaching Prize Selection Committee, University of Chicago, May 1993

Service Curriculum Vitae[8]
David Toback

Conference Organization and Session Chair Work

- International Advisory Committee for Higgs Hunting Conference (2014-2018)
- International Advisory Committee for LHCP Physics Conference (2014-2018)
- Co-chair Top at Twenty Conference, Fall 2014-Spring 2015
- Co-chair CDMS Collaboration Meeting Organizing Committee, Fall 2013-Jan 2015
- International Advisory Committee for Top2013, Fall 2012-Fall 2013
- Session chair, Conference on the Interface of Particle And Nuclear Physics, June 2012
- Session chair, Mini-Symposium on Searches, April Meeting of the APS, May 2009
- Session chair, particle physics session, Meeting of the Texas Section of The APS, Fall 2007
- Organizing committee for the *International Workshop on the Interface of Particle Physics and Cosmology (PPC 2007)*, Spring 2007
- Chair of High Energy Physics Organizing Committee of the *Mitchell Symposium on Astronomy, Cosmology and Fundamental Physics*, Spring 2006
- Local Organizing Committee and Session Chair for the *Mitchell Symposium on Observational Cosmology*, Spring 2004
- Session chair, particle physics session, Meeting of the Texas Section of The APS, Fall 2001
- Organizing Committee, DØ Trigger Workshop, Paris France, Spring 1999

Reviewing Activities

- Journals
  - Reviewer for Physical Review D (2015-2020)
  - Reviewer for Physical Review Letters (2011, 2014, 2017)
  - Reviewer for Physics Letters B (PLB) (2016)
  - Reviewer for Journal of Instrumentation (JINST) (2016)
  - Reviewer for European Journal of Physics (2015)
- Funding Proposals
  - Institutional Reviewer for *High Energy Physics Program Proposal*, National Science Foundation, Fall 2005 and 2024

[8]Note that there is some overlap with teaching related activities. See my teaching CV for additional reviewing and university committee work.

- Proposal Reviewer for Department of Energy Office of High Energy Physics, Fall 2009, 2016, 2017, 2022 and 2023
- Proposal Reviewer for Department of Energy, Nuclear Division. 2018, 2019 and 2022
- Proposal Reviewer for Deutsche Forschungsgemeinschaft, German Research Foundation, Fall 2013, 2016, 2108, and 2019
- Project/Operations Reviewer of the DESI Experiment for the Department of Energy, 2017 and 2018
- Proposal Reviewer for Akeditanca Komisa, Slovakia. 2017
- Project/Operations Reviewer of the LZ Experiment for the Department of Energy. Fall 2016 and 2017
- Proposal Reviewer for Department of Energy Science Graduate Student Research Program, Spring 2016 and 2017
- Funding Proposal Advisory Body of the Government of the Slovak Republic (ASCR) for the Ministry of Education, Science, Research and Sport. Fall 2016
- Proposal Reviewer for the Division of Natural Sciences in the National Research Foundation of South Korea, Fall 2015
- Proposal Reviewer for Foundation for Fundamental Research on Matter (FOM), the physics research council in the Netherlands, Fall 2011
- Proposal Reviewer for a joint proposal to the *Cooperative Grants Program for High Energy Physics,* U.S. Civilian Research and Development Foundation, Fall 2006
- Texas A&M Internal Engineering Sciences Proposal Selection Committee for the 2006 *Advanced Technology Program* (ATP), Fall 2005

Collaboration/Experiment Service Work not mentioned above

- Member of the CDMS Publications and Thesis Committee, Fall 2013-2018
- Chair of the CDF Spokeseperson Election Committee, Fall 2013-Spring 2014
- Chair of the CDF Spokeseperson Election Committee, Fall 2012-Spring 2013
- Member of the Tevatron Legacy Webpage Committee, Fall 2012-Spring 2013
- Co-Convener of the CDF Combined Top Quark + Beyond the Standard Model + Higgs (TopBSM) Physics Group. Spring 2012-Spring 2014
- Member of the CDF International Speakers Committee, Fall 2012-Present
- Convener of the CDF Very Exotic Physics (VEP) Analysis Group, Fall 2010 - Fall 2011
- Chair of Editorial Board for Search for b' Quarks, CDF, Fall 2010-Spring 2011
- Chair of Editorial Board for Search for Scalar Top Quarks, CDF, Fall 2008-Spring 2010
- Chair of Editorial Board for new physics search in $\gamma bj + \not\!\!E_{\rm T}$ events, CDF, Spring 2008-Fall 2009
- Co-Convener of the CDF Supersymmetry Physics Analysis Group, Spring 2007-Fall 2009, Convener, Spring 2010-Fall 2011

- Member of the Editorial Board for W+Higgs Search, CDF, Fall 2004-Spring 2005
- Member of the Tevatron Electroweak Working Group, Fall 2002-Spring 2004
- Member of the Editorial Board for 1^{st} Generation Leptoquark Search, CDF, Summer 2001-Spring 2002
- Member of the Editorial Board for QCD Study of Low E_T Jets in Multijet Events, DØ, Spring 2000
- Member of the Trigger Menu Panel, DØ, Spring 1999- Fall 2000
- Member of the Editorial Board for 2^{nd} Generation Leptoquark Search, DØ, Fall 1998-Spring 1999

University Level Service

- Sigma Xi Science Communication Committee, Fall 2015-Fall 2018
- Faculty and Staff Panel Member for the Aggie Jewish Open House, Spring 2014-2016
- Brown-Rudder and Gates-Muller Outstanding Student Awards Selection Committee, Spring 2012
- Faculty Talent, "Inspiration Stars Here" Texas A&M University marketing video promoting undergraduate opportunies, Division of Marketing & Communications, Spring 2011
- Provost's University Science Core Curriculum Development Committee, Spring 2009-Spring 2010
- Provost's Academic Master Plan's Teaching Roadmap Committee, Fall 2008-Fall 2009
- Panel Member for the Texas A&M Mentoring Faculty Workshop, Fall 2007
- Faculty advisory for Sigma Alpha Mu Fraternity, Spring 2007-Present
- Panel Member for the Texas A&M New Faculty Orientation, Fall 2005
- Texas A&M Faculty Focus Group for Student Life, Summer 2005
- Conceptual Design for Interdisciplinary Tenure Track Positions at Texas A&M University, January 2005-September 2005
- MIT Undergraduate Admissions Educational Councilor, September 2003-2010

College of Science Level Service

- Association of Former Students, College-Level Teaching Awards Selection Committee, Summer 2013
- Faculty Talent, classroom photography subject for graduate and faculty recruiting materials, Fall 2008
- Faculty Talent, "This is Aggieland," Texas A&M University marketing video promoting undergraduate education and research opportunity, Division of Marketing & Communications, Spring 2008
- Faculty Talent, Recruiting and Outreach video and Interview Subject and Team Member, Fall 2007
- College of Science Diversity Committee, Spring 2003

Department of Physics Level Service

- Member of Promotions, Tenure and Appointments Committee, Spring 2024-Present
- Member of High Energy Experiment Faculty Search Committee, Fall 2023-Present
- Graduate Admissions Committee, Spring 2002-Fall 2005, 2016–Present
- Chair of Mitchell Institute Big Computing Committee, Fall 2013–Present

- Marketing Committee, Spring 2014–2022
- IT Governance Committee, 2017
- Astronomy Faculty Search Committee Fall 2013-Spring 2014
- Chair of Mitchell Institute Audio/Video Committee, Fall 2013-Fall 2014
- Chair of Mitchell Institute External Funding Committee, Fall 2012-2014
- Department Head Search Committee, Summer 2011-Fall 2011
- Long Range Planning Committee, Spring 2010-Fall 2011
- Nuclear Solutions Institute Faculty Search Committee Fall 2010-Spring 2013
- Faculty Mentoring Program Development Committee, Summer 2008
- Department Head's Advisory Committee, High Energy Representative, Spring 2008-Fall 2011
- High Energy Experiment Faculty Search Committee Co-Chair, Fall 2007-Spring 2009
- Joint Nuclear/High Energy Physics Summer Research Experience for Undergraduates (REU), Summer 2007, 2008 and 2009
- Performance Evaluation Committee, Spring 2007
- High Energy Experiment Faculty Search Committee, Fall 2006-Fall 2007
- Physics 218 Course Coordinator, Spring 2005
- High Energy Experiment Faculty Search Committee Co-Chair, Spring 2004-October 2006
- First-Year Course Textbook Selection Committee, Fall 2003-Summer 2004
- High Energy Theory Faculty Search Committee, Spring 2002-Spring 2004

Other Television, Video, Radio and Newspaper

- Bad Boy of Science YouTube Channel "Is The Standard Model Done!? W Boson Mass Measurement" (Video 4/2022)
- BBC News (Video4/2022)
- Texas A&M Science "I am Texas AM Science (Episode 11)" (6/2018)
- TedX TAMU "Dark Matter and the Big Bang" (4/2015)
- Texas A&M Science Video "Happy Birthday, Albert Einstein!" (4/2015)
- KAGS/NBC TV "Next Generation "Dark Matter" Could Change Our Views" (7/2014)
- KAGS/NBC TV "The Higgs Boson Particle" (3/2013)
- Houston Chronicle article: "11 for '13: Bhaskar Dutta and David Toback believe we will soon identify Dark Matter" (12/2012)

- Austin-American Statesman article: “Elemenatry, my dear Higgs” and also appeared as ”A cosmic whodunit: the case of the Higgs Boson” (9/2012)
- KAGS/NBC TV on “Texas A&M and the Higgs Discovery” (7/2012)
- New Hampshire Public Radio “A Monumental Discovery? Maybe. Should we care? This guy says we should” (4/2011)
- The Teaching Company DVD Pilot: “Dark Matter: Inquiring Minds Want to Know” (2/2011)
- College Station KEOS/Radio Interview for “Biased Transmission? (9/2009)