

Jonathan Asaadi

Curriculum Vitae
February 2018

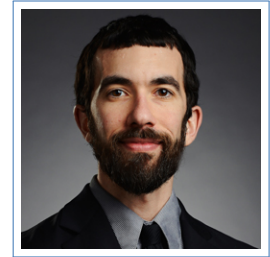
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Appointments

2015 - Present **Assistant Professor**, *University of Texas Arlington*, Arlington, TX.

2012 - 2015 **Post-Doctoral Researcher**, *Syracuse University*, Syracuse, NY.

Education

Awarded 2012 **Ph.D. Physics**, *Texas A&M University*, College Station, TX.

Thesis Topic: Search for New Physics in the Exclusive γ +Missing Transverse Energy Channel in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV

Advisor: Professor David Toback

Awarded 2007 **M.S. Physics**, *Texas A&M University*, College Station, TX.

Thesis Topic: Supersymmetry, New Physics Prospects, & Grid Computing

Advisor: Professor David Toback

Awarded 2004 **B.S. Physics**, *University of Iowa*, Iowa City, IA.

Minor in Mathematics

Funding and Awards

2018 Fermilab Neutrino Physics Center Fellowship, "SBND Cold Electronics Testing and Vertical Slice Test", \$4,000

2017-2020 Department of Energy Investigator-Initiated Research Projects, "Research in Elementary Particle Physics (Intensity Frontier)", \$155,000 per year

2017-2020 Department of Energy Investigator-Initiated Research Projects, "Research in Elementary Particle Physics (Detector R&D)", \$31,000 per year

2016 Deep Underground Neutrino Experiment Project Funding, "Development of Quality Assurance and Quality Control Procedures for the protoDUNE experiment", \$10,000

2014 Albert Einstein Center Visiting Fellow, Laboratory for High Energy Physics (LHEP) University of Bern, Switzerland, \$5,000

Physics Research

- Precision measurements of neutrino properties utilizing short and long baseline accelerator based beams.
- Liquid Argon Time Projection Chamber (LArTPC) detector technology development and research.
- Neutrino cross-section measurements and background estimation relevant to neutrino oscillation searches.
- Signature based searches for non-standard weakly interacting massive particles in neutrino fixed target experiments .

Selected Publications

[A complete list of publications and technical notes is available upon request](#)

Tetraphenyl Butadiene Emanation and Bulk Fluorescence from Wavelength Shifting Coatings in Liquid Argon,

J. Asaadi, B.J.P Jones, A. Tripathi, I. Parmaksiz, H. Sullivan, Z. G. R. Williams.

Submitted to JINST, arXiv:1804.00011

First Demonstration of a Pixelated Charge Readout for Single-Phase Liquid Argon Time Projection Chambers,

J. Asaadi, M. Auger, A. Ereditato, D. Goeldi, R. Haenni, U. Kose, I Kreslo, D. Lorca, M. Luethi, C. Rudolf Von Rohr, J. R. Sinclair, F. Stocker, C. Tognina, M. Weber.

Submitted to JINST, arXiv:1801.08884

A New Light Higgs Boson and Short-Baseline Neutrino Anomalies ,

J. Asaadi, E. Church, R. Guenette, B. J. P. Jones, A. M. Szelc.

Phys. Rev. D 97, 075021 (2018), arXiv:1712.08019

First Observation of Low Energy Electron Neutrinos in a Liquid Argon Time Projection Chamber,

ArgoNeuT Collaboration: R. Acciarri et al.

Phys. Rev. D 95, 072005 (2017), arXiv:1610.04102

Design and construction of the MicroBooNE Detector,

MicroBooNE Collaboration: R. Acciarri, et. al.

JINST 12 P02017 (2017) arXiv:1612.05824

Construction and Assembly of the Wire Planes for the MicroBooNE Time Projection Chamber,

R. Acciarri, C. Adams, J. Asaadi et. al.

JINST 12 T03003 (2017), arXiv:1609.06169

Measurement of the inclusive neutral current π^0 cross-section with the ArgoNeuT detector in the NuMI low energy beam ,

ArgoNeuT Collaboration: R. Acciarri et al.

Phys. Rev. D 96, 012006 (2017), arXiv:1511.00941

ArgonCube: a novel, fully-modular approach for the realization of large-mass liquid argon TPC neutrino detectors ,

ArgonCube Collaboration: C. AMSLER et al.

CERN-SPSC-2015-009

Testing of High Voltage Surge Protection Devices for Use in Liquid Argon TPC Detectors

J. Asaadi, J.M. Conrad, S. Gollapinni, B.J.P. Jones, H. Jostlein, J.M. St. John, T. Strauss, S. Wolbers, J. Zennamo.

JINST 9 P09002 (2014), arXiv:1406.5216

The detection of back-to-back proton pairs in Charged-Current neutrino interactions with the ArgoNeuT detector in the NuMI low energy beam,

ArgoNeuT Collaboration: R. Acciarri et al.

Phys. Rev. D 89, 112003 (2014), arXiv:1405.4261

Signature-based search for delayed photons in the exclusive photon plus missing transverse energy events from $p\bar{p}$ collisions with $\sqrt{s} = 1.96$ TeV,

CDF Collaboration: T. Aaltonen et al.

Phys. Rev. D 88, 031103(R) (2013), arXiv:1307.0474

Snowmass 2013 Young Physicists Science and Career Survey Report,

J. Anderson, J. Asaadi, B. Carls, R. Cotta, R. Guenette, B. Kiburg, A. Kobach, H. Lippincott, B. Littlejohn, J. Love, B. Penning, M. Soares Santos, T. Strauss, A. Szec, E. Worcester, F. Yu.

Snowmass White paper SNOW13-00132, arXiv:1307.8080

Leadership roles, highlighted accomplishments, and group service

2016–present **Spokesperson for the LArIAT Experiment.**

This role is responsible for:

- Leading the analysis, publication, and experimental operations of the experiment
- Organizing collaboration talks at international and domestic conferences
- Coordination of data taking period and experimental upgrades

My accomplishments thus far while in this role:

- Successful operation of 5 mm and 3 mm wire plane spacing data taking period Feb 2017 - June 2017 Run-III
- Leading the first π^- -Argon cross-section publication (currently under review)
- Bringing in international collaborators from Bern University to aid in the deployment of the first Liquid Argon TPC with > 28,000 pixel readout

2016–present **Fermilab Detector R&D Advisory Board Member.**

This role is responsible for:

- Working with Fermilab scientists and management to set the priorities for the lab directed research
- Allocation of the Fermilab detector R&D budget (~ \$350k per year)
- Reporting to the Fermilab Physics Advisory Board

My accomplishments thus far while in this role:

- Securing funding for the LArIAT Run-III Experiment
- Securing funding for the PixLAr Experiment

- 2017 **Chair SBND APA and Field Cage Review Committee.**
This role is responsible for:
- Working with the SBND project to assess and provide feedback on the current schedule and progress of the production of the anode-plane-assembly and field cage production
 - Generate a report providing findings and action items related to the production of the detector components
 - Report findings to Fermilab Physics Advisory Board
- My accomplishments thus far while in this role:
- Successful review of production readiness leading to the beginning of construction of the various detector components
- 2016–present **UTA Physics Department Colloquium Co-Organizer.**
This role is responsible for:
- Arranging speakers for the weekly colloquium series within the UTA physics department
 - Coordinating the travel arrangements and meeting schedule for invited speakers
- My accomplishments thus far while in this role:
- Securing department level funding in support of speakers travel and lodging expenses
- 2012–2016 **Co-Convener MicroBooNE Astro-Particle and Exotics Physics Group.**
This role is responsible for:
- Cosmic ray background measurements and removal for the MicroBooNE experiment
 - Supernova neutrino background studies in utilizing LArTPC's
 - Signature based searches for new hidden/dark sector physics in LArTPC's
 - Proton decay background studies using spallation sources in LArTPC's
 - New detector technology and readout techniques for use in LArTPC's
- My accomplishments thus far while in this role:
- Guided various detector R&D papers to publication
 - Began new exotics program searching for Hidden/Dark Sector Physics
 - Coordinate the analysis team responsible for cosmic ray tagging
 - Co-lead research in utilizing GPU's for real time pattern recognition in LArTPC's
- 2013–2015 **MicroBooNE Time Projection Chamber (TPC) Commissioning Coordinator.**
This role is responsible for:
- Contribute to the construction and deployment of the MicroBooNE TPC
 - Developing the commissioning plan for the MicroBooNE TPC
 - Verifying the commissioning data and deciding on necessary corrections
- My accomplishments thus far while in this role:
- Lead the winding, installation, and testing of the MicroBooNE TPC wire planes
 - Co-lead the cleaning, construction, and installation of the MicroBooNE TPC
- 2013–2015 **LArIAT Time Projection Chamber (TPC) Commissioning Coordinator.**
This role is responsible for:
- The construction and testing of the LArIAT TPC and wireplanes
 - Lead the deployment of the high voltage, light detection system, and TPC and vacuum systems
 - Co-lead in the development a commissioning plan for the first test-beam run
- 2013–2015 **MicroBooNE Data Production Manager.**
This role is responsible for:
- Develop structure for verifying data taken online by the MicroBooNE DAQ
 - Processing and storing the data taken into a central database
 - Ensuring the data is cataloged and accessible to the collaboration

2012–2013 **Convener for the Snowmass Young Physicists Group.**

This role is responsible for:

- Organizing young physicists to contribute to the Community Summer Study 2013
- Coordinating speakers from the DOE and NSF to come to speak to young physicists
- Organizing town-hall meetings between the national labs and their young physicists users

My accomplishments while in this role:

- Organizing 10 different town-hall meetings at 4 different national labs for young physicists during the Snowmass process
- Successfully wrote, administered, and analyzed data from a survey of over 1000 physicists to express their interests and concerns during the Snowmass planning process
- Published the results of the survey as a Snowmass Whitepaper that was ultimately used by the Particle Physics Project Prioritization Panel (P5)
- Speaking to the plenary session at Snowmass 2013 and raising the concerns of young physicists and their role in the future of HEP to the general audience
- Giving interviews to the media leading up to and during the Snowmass process

2007–2012 **Research Assistant on the CDF Experiment.**

This role is responsible for:

- Maintenance and operation of the Electromagnetic Calorimetry Timing System
- Support for the online monitoring program known as ObjectMon
- CDF Shift Crew ACE: Data Acquisition Quality Expert (April - August 2009)
- CDF Shift Consumer Operator: Data Quality Shifts (January 2008 & January 2010)

My accomplishments while in this role:

- Lead the timing calibration of the Central Outer Tracker (COT) for use in the delayed photons searches
- Published the first exclusive $\gamma_{delayed} + \text{Missing Transverse Energy}$ signature based search for physics beyond the Standard Model

Selected Seminar and Invited Conference Talks

[A complete list of talks prior to Sept. 2015 is available upon request](#)

- May 2018 **The Mitchell Conference on Collider, Dark Matter, and Neutrino Physics 2018,**
College Station, TX.
The Fermilab LArTPC Neutrino Program
- October 2017 **International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN17),**
Coventry, UK.
Status of the DUNE near detectors
- September 2017 **P-25 Seminar at Los Alamos National Labs ,**
Los Alamos, NM.
Pions in Liquid Argon: From neutrino interactions to test beams!
- June 2017 **11th International Workshop on Neutrino-Nucleus Scattering in the Few-GeV Region (NuINT2017),**
Toronto, Canada.
Pion Scattering at LArIAT
- January 2017 **Illinois Institute of Technology (IIT) Physics Colloquium,**
Chicago, IL.
The Fermilab Neutrino Program

- November 2016 **Harvard Laboratory for Particle Physics and Cosmology Seminar,**
Boston, MA.
The Fermilab Neutrino Program
- November 2016 **International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN2016),**
Beijing, China.
Single Phase Liquid Argon Time Projection Chambers
- October 2016 **Coordinating Panel for Advanced Detectors (CPAD) Instrumentation Frontier Meeting,**
Pasadena, CA.
Pixel Readout for the DUNE Detector
- October 2016 **Coordinating Panel for Advanced Detectors (CPAD) Instrumentation Frontier Meeting,**
Pasadena, CA.
The LArIAT Experiment
- September 2016 **Texas Tech. Department of Physics and Astronomy Physics Colloquium,**
Lubbock, TX.
The Fermilab Neutrino Program
- August 2016 **US-Korea Conference on Science, Technology, and Entrepreneurship 2016,**
Arlington, TX.
Fermilab Neutrino Program
- August 2016 **QuarkNet at the International Conference for High Energy Physics (ICHEP) 2016,**
Chicago, IL.
Introduction to the Fermilab Neutrino Program
- April 2016 **Fermilab Joint Experimental-Theoretical Physics Seminar 2016,**
Batavia, IL.
LArIAT First Pion Cross Section Results
- October 2015 **Coordinating Panel for Advanced Detectors (CPAD) Instrumentation Frontier Meeting,**
Arlington, TX.
New Technologies for Neutrino Oscillations
- September 2015 **Yale University Weak Interaction Discussion Group (WIDG) Seminar,**
New Haven, CT.
The Liquid Argon In A Testbeam (LArIAT) Experiment

Teaching Experience

- 2016–present **Assistant Professor of Physics**, *University of Texas Arlington*, Arlington, Tx.
Teaching responsibilities
- Preparing and administering bi-weekly graduate quantum mechanics course lecture material and homework (~15 students/semester) (PHYS 5307)
 - Preparing and administering bi-weekly undergraduate advanced mechanics course lecture material and homework (~20 students/semester) (PHYS 4319)
 - Preparing and administering bi-weekly introductory non-calculus based lecture material and homework (~90 students/semester) (PHYS 1441/1442)
 - Preparing and administering exams and quizzes based on material from lecture and the textbook
- 2012–2015 **Adjunct Professor of Physics**, *Roosevelt University*, Chicago, Il.
Teaching responsibilities
- Preparing and administering bi-weekly introductory non-calculus based lecture material and homework (10-40 students/semester)
 - Preparing and administering bi-weekly introductory astronomy/cosmology course lecture material and homework for non-science majors (30-50 students/semester)
 - Advising and overseeing undergraduate lead research projects (1-2 students/semester)
 - Developing and maintaining a large data base of textbook questions and math quizzes in the Blackboard online environment
 - Developing new lab based material to better fit new facilities and administering weekly lab sections
- 2004–2010 **Teaching Assistant**, *Texas A&M University*, College Station, TX.
Teaching responsibilities
- WebCT/Elearning administrator for Texas A&M Physics Department
 - Teaching Assistant for the graduate Experimental Methods and Tools course
 - Teaching Assistant for introductory calculus based physics courses
 - Teaching Assistant for introductory cosmology course

Experiments

Current Experiments

- MicroBooNE **Micro-Booster Neutrino Experiment**, (2012 - Present).
A ~100 ton LArTPC located at the Booster neutrino beam-line at Fermilab that will measure low energy cross-sections and investigate the low energy excess observed by MiniBooNE
- LArLAT **Liquid Argon in a Testbeam**, (2012 - Present).
A phased program is currently being executed at Fermilab for a precise calibration of the LArTPC detectors at the Fermilab Test Beam Facility
- PixLAr **Pixel Based Liquid Argon Experiment**, (2017 - Present).
Demonstration of pixel based charge readout in a liquid argon time projection chamber experiment
- ArgoNeuT **Argon Neutrino Test-stand**, (2012 - Present).
A small-scale LArTPC which recorded data in the NuMI beam-line at Fermilab in 2009-2010 providing the first ever data for low energy neutrino interactions within a LArTPC
- ArgonCube **Liquid Argon Cube Prototype**, (2014 - Present).
Proposed R&D experiment based at Bern University and the CERN test beam to deploy modular LArTPC's for multi-kiloton scale neutrino experiment with replaceable TPC's

SBND **Short-Baseline Near Detector**, (2013 - Present).

Proposed experiment to deploy a ~60 ton LArTPC as a near detector at the Fermilab Short-Baseline Facility to conclusively address the LSND oscillation anomaly

ICARUS **ICARUS**, (2015 - Present).

The refurbished 600 ton LArTPC detector from Gran Sasso Italy to serve as the far detector at the Fermilab Short-Baseline Facility in order to address the LSND oscillation anomaly

DUNE **Deep Underground Neutrino Experiment**, (2012 - Present).

Planned long baseline neutrino experiment conceived around a new neutrino source from Fermilab and a large underground LArTPC at the Sanford Underground Research Facility

[Past Experiments](#)

CDF **Collider Detector at Fermilab**, (2007 - 2013).

Multi-purpose detector studying high energy particle collisions at Fermilab's Tevatron, the worlds highest energy proton-antiproton collider which ran until 2012

CMS **Compact Muon Solenoid**, (2007 - 2010).

A general-purpose detector at the Large Hadron Collider (LHC). It is designed to investigate a wide range of physics, including the search for the Higgs boson, extra dimensions, and particles that could make up dark matter

Technical Skills

Operating Systems	Microsoft Windows, Apple OS, Scientific and Ubuntu Linux as well as other UNIX variants
Programming Languages	C, C++, Python, FORTRAN, UNIX shell scripting, CUDA, HTML
Applications	ROOT, LArSoft, Maple, Condor, VMWare, T _E X, L ^A T _E X, B _I B _T E _X , Microsoft Office (Word, Excel, Outlook, Powerpoint), and other common productivity packages
Teaching Applications	Blackboard/Elearning, LabVIEW, Calibrated Peer Review Online Tools (CPR), Turnitin.com (Online Plagiarism Detector)