VITA

Joel W. Walker
Associate Professor of Physics
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Academic Preparation

Ph.D. in Theoretical Particle Physics, Texas A&M University, 2005
        Thesis: "Aspects of Grand Unification and String Phenomenology"
        Supervisor: Dimitri V. Nanopoulos, Distinguished Professor of Physics

B.S. in Physics, Harding University, 1997

Professional Experience

2013-Present, Associate Professor of Physics, Sam Houston State University

2007-2013, Assistant Professor of Physics, Sam Houston State University

2005-2007, Visiting Assistant Professor of Physics, Sam Houston State University

1997-2005, Graduate Assistant, Texas A&M University Department of Physics

Research and Scholarly Endeavors (Publications are itemized at *http://arxiv.org/a/walker_j_1*)

Phenomenology (3 JHEP, 3 NPB, 8 PRD, 7 PLB, 2 EPJC, 6 published elsewhere)
        Higgs and supersymmetric LHC signatures and event reconstruction
        Coherent neutrino scattering as probe of Z-prime, sterile ν, ν magnetic moment
        Proton decay, dark matter, and rare process constraints

Theory (2 NPB, 1 PRD, 3 PLB, 3 published elsewhere)
        Grand unified models, including Flipped SU(5)
        Models based on no-scale supergravity
        String theoretic and D-brane model building

Experiment Service
        Monitoring tools for CMS GRID Computing at the LHC
        Guest member of CDF at the Fermilab Tevatron & CMS at the LHC
        Consumer Operator in the CDF control room at the Fermilab Tevatron

Computing
        High performance and high throughput computing
        Large-scale programming and physically motivated numerical analysis
        Scripting, batch process automation, and inter-process message passing

Teaching
        Instructor of 8 unique upper division and 8 unique lower division courses
        Mentor for SPS and supervisor of student research
        Co-developer of PHYS 1401 "Physics Boot Camp" course

Public Software Development

"RHADAManTHUS". (2015-2017) Recursively Heuristic Analysis, Display, and Manipulation - The Histogram Utility Suite: A Consumer-Level Tool for the Automated Graphical Rendering of Collider Event Statistics

"AEACuS". (2012-2017) Algorithmic Event Arbiter and Cut Selector: A Consumer-level tool for implementing generic collider data selection cuts in the search for new physics. joelwalker.net/code/cut_lhco.tar.gz

"Brazos". (2011-2014) Software for the online monitoring of CMS data analysis centers. With students Jacob W. Hill and Michael W. Kowalczyk. github.com/joelwwalker/Brazos

Selected Presentations

"A New Scale-Invariant Jet Algorithm for the Substructure Era", Pheno Conference, University of Pittsburgh, May 9, 2017

"Searching for New Physics with Coherent Neutrino Scattering", University of Louisiana at Lafayette, October 12, 2016, and University of Houston at Clear Lake, April 10, 2017

"Cutting with AEACuS and Plotting with RHADAManTHUS", (Re)interpreting New Physics at LHC Workshop, CERN, Dec 12-14, 2016 and Monte Carlo Tools for Beyond the Standard Model, Fermi National Laboratory, May 18-20, 2015

"Sensitivity to Z-prime, Neutrino Magnetic Moment, and Sterile Neutrino Oscillation from Coherent Neutrino-Nucleus Cattering", CETUP Workshop, Lead, South Dakota, July 2016

"Probing the Goldstone Equivalence Theorem in Neutralino Z/H Decays", Arnowitt-Mitchell Collider and Dark Matter Symposium, Mitchell Institute for Fundamental Physics & Astronomy, May 18-22, 2015

 "Enhancing Collider Sensitivity to Stau-Neutralino Co-Annihilation by Application of a Boosted Event Topology Selection", Mitchell Institute for Fundamental Physics & Astronomy, May 12-15, 2014

External Awards & Funding

National Science Foundation, High Energy Theory Division, "RUI: Supersymmetric Theory, Phenomenology, and Tool Building" (2015-2018)

2013-2015 KITP Scholar, Kavli Institute for Theoretical Physics, University of California, Santa Barbara

Funded participant in the Short-Stay Visitor Program at the LHC Physics Center, Fermilab (2012)

Funded participant in Norman Hackerman ARP grant "Discovery of Dark Matter using High Performance Computing and LHC Data at Texas A&M" under PI's David Toback and Guy Almes (2011)

Institutional Awards & Funding

Faculty Research Grant, Sam Houston State University (2013)

Research Enhancement Grant, Sam Houston State University (2011-2012,2014-2015)

Awarded private ten node computing cluster as research startup (2007)

Recent Collaborators and Affiliations

James Dent (Louisiana at Lafayette), Bhaskar Dutta (TAMU), Tathagata Ghosh (OSU), Ilia Gogoladze (Delaware), David Toback (TAMU), Yu Gao (TAMU), Louis Strigari (Texas A&M University), Rupak Mahapatra (TAMU), Nader Mirabolfathi (TAMU), Dimitri V. Nanopoulos (TAMU, HARC, Athens), Jason Kumar (Hawaii), Tianjun Li (Chinese Academy of Sciences; TAMU), Shu Liao (TAMU), James A. Maxin (Tulsa), Jay Newstead (ASU), Pearl Sandick (Utah), David Sanford (Caltech), Qaisar Shafi (Delaware), Kuver Sinha (Syracuse), Patrick Stengel (Michigan)