ADARSH PYARELAL

School of Information
University of Arizona
Tucson AZ 85719
adarsh.cc
adarsh@email.arizona.edu

EDUCATION

2017 **Ph. D. in Physics**, University of Arizona
Thesis: *Hidden Higgses and Dark Matter at Current and Future Colliders*

2011 **B. A. in Physics**, Reed College
Thesis: *Contribution of the neutral pion Regge trajectory to the exclusive central production of $\eta(548)$ mesons in high energy proton/proton collisions*

PUBLICATIONS

2017 *A Razor Search for Bino Dark Matter at 100 TeV*
A. Pyarelal, and S. Su
(Manuscript in preparation)

Exotic Higgs Decays at 14 and 100 TeV
F. Kling, H. Li, A. Pyarelal, H. Song, and S. Su
(Manuscript in preparation)

2015 *Light Charged Higgs Bosons to AW/HW via Top Decay*
F. Kling, A. Pyarelal, and S. Su
Journal of High Energy Physics, **11** (2015) 051

HONORS AND AWARDS

2016,17 Dept. of Physics Publications/Presentations Award
2014,17 Outstanding Graduate Student Colloquium Presentation

2016 Galileo Circle Scholarship

2015 Graduate and Professional Student Council Travel Award
Professor C. Y. Fan 'FanFare' Travel Award
Graduate College Fellowship in Physics

2014-16 APS 4CS Student Travel Grant

TALKS

2016 *Machine Learning and Particle Physics*
Tucson Data Science Meetup, Tucson, AZ

A Razor Search for Dark Matter at a Future 100 TeV Collider
Joint Meeting of the Four Corners and Texas Sections of the American Physical Society, Las Cruces, NM

2015 *Light Charged Higgs Bosons in Single-Top Production*
Phenomenology 2015 Symposium, University of Pittsburgh

Light Charged Higgs Bosons in Two Higgs Doublet Models
Annual Meeting of the APS Four Corners Section, Tempe, AZ

2014 *Light Charged Higgs Bosons in Single-Top Production*
Annual Meeting of the APS Four Corners Section, Orem, UT

Light Charged Higgs Bosons to AW/HW via Top Decay
23rd International Conference on Supersymmetry and Unification of Fundamental Interactions, Lake Tahoe, CA

RESEARCH EXPERIENCE

2017– **Postdoctoral Researcher**, University of Arizona
I am currently developing and implementing algorithms to infer the structure of chemical reaction pathways within cells, using data automatically extracted from biomedical research papers. Taking a Bayesian generative approach, I have implemented an MCMC sampler to recover the maximum a posteriori estimate of the graph structure of a pathway given a set of binary interaction data.

2016-17 **Research Assistant**, University of Arizona

During the course of my doctoral research, I developed three analyses aimed at discovering or constraining new physics models in high-energy particle collision experiments.

Exotic Higgs Decays at 14 and 100 TeV

This analysis aims to determine the prospects of exotic Higgs decay modes at a 100 TeV collider for all physically viable Two-Higgs Doublet Models, using boosted decision tree classifiers and physics-motivated input features.

A Razor Search for Bino Dark Matter at 100 TeV

I designed an analysis to examined the prospects of finding bino-like dark matter resulting from the decay of pair-produced higgsinos at a 100 TeV collider, using razor variables and boosted decision trees.

Light Charged Higgs Bosons to AW/HW via Top Decay

This analysis is designed to find a charged Higgs produced via the decay of a top quark at the 14 TeV LHC, in the context of a Type-II Two Higgs Doublet Model, using a unique kinematical angle to discriminate between signal and background events.

TEACHING EXPERIENCE

2011-17 **Teaching Assistant**, University of Arizona
Introduction to Scientific Computing (Spring 2017)
Advanced Lab, (Fall 2013-Fall 2016).
Introductory Physics for non-majors - Lecturer (Fall 2012).
Introductory Electricity and Magnetism (2011-12).
Introductory Physics for non-majors - Lab (Summer 2012 & Summer 2014).

SERVICE

2015 GPSC Travel Grant Judge
2012-13 Member of Physics Grad Council

Member of the Associated Graduate Council for the College of Science
Organized the weekly departmental graduate student seminar series
Arizona Assurance Mentor

SKILLS

Data analysis with C++ and PYTHON.
Software version control with GIT and Github
Website design with HTML and CSS, static site generation.
Writing and typesetting scientific manuscripts with LaTeX
Languages: English (native), Hindi, Malayalam

PROFESSIONAL AFFILIATIONS

American Physical Society

REFERENCES

Kobus Barnard
Professor, Department of Computer Science
University of Arizona
kobus@cs.arizona.edu

Clayton Morrison
Associate Professor, School of Information
University of Arizona
claytonm@email.arizona.edu

Shufang Su
Professor, Department of Physics
University of Arizona
shufang@physics.arizona.edu