Yvonne Ng

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Education:

Ph. D., Particle Physics, University of California, Irvine (Irvine, CA) Sept 2021
Advisor: Prof. Daniel Whiteson

B. S., Physics, *Magna Cum Laude,* University of Texas, Arlington (Arlington, TX) Jul 2015
Advisor: Prof. Andrew White

Research Experience:

Member of the ATLAS Collaboration. 2016-Present

- ***Analysis Contact*** Leading the effort in searching for resonances in the low mass di-muon final state in the ATLAS experiment.
- Conducting study on unconventional signatures in the di-muon final state with a weakly-supervised learning method.
- Developing a Gaussian process based background estimation and signal bump-hunting method with Bayesian inference.
- Initiated the creation and commissioning of a novel data-scouting (trigger level analysis) di-muon trigger geared towards sensitivity improvement for future data taking period.
- Primary developer of the online monitoring software for the New Small Wheel— the ATLAS muon spectrometer upgrade. With activities at a cosmic ray stand and final site of installation.
- Primary analyzer of the dijetISR resolved analysis effort of ATLAS in year 2017-2018. Performed sensitivity study, background modeling, signal injection test, unblinding, limit setting and systematics studies.
- Developed a new jet calibration tool to reduce computation time for the experiment.
- Responsible for data-taking operation as a ATLAS control room shifter at the trigger and run-control desk in year 2017-2018.

Special Author of the DUNE Collaboration 2013-2015

- Seasonal dependence and noise study of the Gas Electron Multiplier detector as a beam aligner for the experiment
- Built hardware prototype detector and maintained the operation of a cosmic ray stand.

- Managed shifts for 5 other undergrads and oversaw the functioning of the Gas Electron Multiplier laboratory.

Research Student at the Chinese University of Hong Kong Summer 2013

- "Cosmological stimulation of galactic cluster collisions at different expansion rates of the universe"
- Advisor: Prof. Ming Chung Chu

Grants, Fellowships and Awards:

- **US ATLAS Center Funding Proposal Award**, (6.3k) (Lawrence Berkeley National Lab.) 2020
  Primary proposal writer, along with Benjamin Nachman and Daniel Whiteson, in support of travel and 3 months of living expenses to LBNL for collaboration on the CWola project.
- **Best Poster Award**, Dark Matter at LHC (Seattle, Washington) 2019
  Poster on "Low mass dijet resonances search using ISR with ~80fb^{-1} $\sqrt{s}$ = 13TeV ATLAS Data"
- **Chancellor's Fellowship** ($20k), University of California, Irvine 2015-2017
- **Magna Cum Laude**, University of Texas at Arlington 2015
- **Dean's List,** University of Texas at Arlington 2011, 2015
- **Travel Award**, National Society of Physics Students, American Physical Society April Meeting 2015
- **Truman D. Black Endowed Scholarship in Physics**, University of Texas at Arlington 2015
- **James L. Horwitz Scholarship**, University of Texas at Arlington 2014

Invited Seminars/Tutorials:

- **Session Convener**, ATLAS Higgs and Diboson Searches Workshop (Virtual) Aug 2020
  On "Background estimation techniques".
- **Particle Physics Seminar**, University of California, Riverside (Riverside, California). Oct 2019
  Talk on "Hunting for weird resonances in the Large Hadron Collider"
- **Smooth Background Fitting Tutorial,** ATLAS Exotics and HDBS Workshop (Naples, Italy) June 2019
  Tutorial on "Gaussian process as a background fitting and signal hunting method"

Conference/Workshop Presentations:

Oral Presentation

- ATLAS Higgs and Diboson Searches Workshop (Virtual) Aug 2020
  Talk on "Overview of established background estimation techniques"
- ATLAS Higgs and Diboson Searches Workshop (Virtual) Aug 2020
  Talk on "Gaussian process on background fitting and limit setting"
- ATLAS Higgs and Diboson Searches Workshop (Virtual) Aug 2020
  Talk on "Motivating the dimuon TLA trigger for ATLAS Run III"

- ATLAS Higgs and Diboson Searches Workshop (Virtual) Aug 2020
  Co-Talk on "Dark Matter reinterpretation on in the Dilepton channel "
- ATLAS Trigger Level Analysis Workshop (Geneva, Switzerland) Dec 2019
  Talk on "Motivating the dimuon trigger level analysis for ATLAS Run 3"
- Southern California Beyond the Standard Model Physics Meeting (Irvine, California) Sep 2019
  Graduate Student Gong Show — Talk on "Resonance finding in the LHC"
- Dark Matter at LHC (Seattle, Washington) Oct 2019
  Talk on "The Unexplored Landscape of Two Body Resonances"
- Latin American Symposium on High Energy Physics (Lima, Peru) Dec 2018
  Talk on "Dark Matter search In ATLAS", *On Behalf of the ATLAS Collaboration*
- American Physical Society National April Meeting, 2015 (Baltimore, Maryland) Apr 2015
  Talk on "Seasonal dependence and aging effect of the Gas Electron Multiplier"

Poster Presentation

- Neural Information Processing System—Women in ML(Vancouver, Canada) Dec 2019
  Poster on "Gaussian process in Collider Physics"
- European Summer School of High Energy Physics (St. Petersburg, Russia) Sep 2019
  Poster on "Low mass dijet resonances search using ISR with ~80fb^{-1} $\sqrt{s}$ = 13TeV ATLAS Data",
  On behalf of the ATLAS Collaboration
- Dark Matter at LHC (Seattle, Washington) Aug 2019
  Poster on "Low mass dijet resonances search using ISR with ~80fb^{-1} $\sqrt{s}$ = 13TeV ATLAS Data",
  On behalf of the ATLAS Collaboration
- Large Hadron Collider Experimental Committee Meeting (Geneva, Switzerland) Feb 2018
  Poster on "The Dijet+ISR Analysis in ATLAS: Searching For Low-Mass Dark Matter Mediator"
- American Physical Society National meeting, 2014 (Savannah, Georgia) Apr 2014
  Poster on "Long Term Multiplication Behavior Studies of the 30cmx 30cm prototype Gas Electron Multiplier"

Professional Services:

Women in Science

- **Local Organizing Committee**, Conference for Undergraduate Women in Physics Jan 2020
  American Physical Society (Irvine, California)
- **Chair for Student Presentation I**, Conference for Undergraduate Women in Physics Jan 2020
  American Physical Society (Irvine, California)
- **Panelist**, Conference for Undergraduate Women in Physics Jan 2020
  American Physical Society (Irvine, California)

- **Mentor**, Conference for Undergraduate Women in Physics — Jan 2020
  American Physical Society (Irvine, California)
- **Popular Science Talk Speaker,** — May 2019
  Talk Titled: "All things matter! — A search for dark matter in the Large Hadron Collider"
  The True Light Girls' Middle School of Hong Kong (Hong Kong)
- **Graduate Mentor** for Undergraduate Women in Physics — 2015-2016
  Women in Physics, Department of Physics and Astronomy
  University of California, Irvine (Irvine California)

Other Professional Service

- **Invited Speaker**, Grad. School Application Workshop 2020 — Oct 2020
  Oxford University Hong Kong Scholar Association (Hong Kong)
- **Invited Panelist**, Hong Kong PhD Symposium 2020 — Jan 2020
  "Scholar's Journal: Triumphs and Struggles beyond PhD"
  Oxford University Hong Kong Scholar Association (Hong Kong)
- **Science Fact-Check**, The New Yorker — Dec 2019
  "Elements — The Histories Hidden in the Periodic Table"
  Journalist: Neima Jahromi
- **Official Tour Guide**, CERN (Geneva, Switzerland) — 2017-Present
- **Volunteer**, Popular Science Outreach @ UC Irvine Astronomy Outreach Program — 2015-2016
- **Volunteer**, National Society of Physics Students @ American Physical Society April Meeting — 2015

Teaching experience:

- **Teaching Assistant**, Basic Physics III for pre-medical and biology students — Spring 2016
- **Teaching Assistant**, Basic Physics II for pre-medical and biology students — Winter 2016
- **Teaching Assistant**, Classical physics for engineering and physical science students — Fall 2015

Last updated: 2020–10-9

Publication List

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Published Papers

1. ATLAS Collaboration, *Search for low-mass resonances decaying into two jets and produced in association with a photon using p p collisions at √s = 13TeV with the ATLAS detector*, Phys. Lett. B (2019) 56, 2019, arXiv:1901.10917 [hep-ex]

2. ATLAS Collaboration, *In situ calibration of large-R jet energy and mass in 13 TeV proton-proton collisions with the ATLAS detector*, Eur. Phys. J. C 79 (2019) 135, 2019, arXiv:1807.09477 [hep-ex]

3. ATLAS Collaboration, *Search for light resonances decaying to boosted quark pairs and produced in association with a photon or a jet in proton-proton collisions at √s =13TeV with the ATLAS detector* Phys.Lett. B788 (2019) 316, arXiv:1801.08769 [hep-ex]

4. N. Craig, P. Draper, K. Kong, Y. Ng and D. Whiteson, *The unexplored landscape of two body resonance,* PITT-PACC-1610 arXiv:1610.09392 [hep-ex]

5. Long-Baseline Neutrino Facility (LBNF) and Deep Underground Neutrino Experiment (DUNE), Y. Ng, *Conceptual Design Report Vol.1-2* arXiv:1601.05471[hep-ex]

Work in Progress

1. ATLAS Collaboration, S*earch for low mass resonances in the dimuon and boosted dimuon channel with the ATLAS detector*

2. ATLAS Collaboration, *Dimuon Resonance searches with a weakly supervised learning method CWOLA* [In collaboration with LBNL Scientist Benjamin Nachman]