NSF BIOGRAPHICAL SKETCH

NAME: Hopkins, Walter

POSITION TITLE & INSTITUTION: Assistant Physicist, Argonne National Laboratory

(a) PROFESSIONAL PREPARATION -(see PAPPG Chapter II.C.2.f.(a))

INSTITUTION	LOCATION	MAJOR / AREA OF STUDY	DEGREE (if applicable)	YEAR YYYY
Rochester Institute of Technology	Rochester, NY	Physics and Applied Mathematics	BS	2007
Cornell University	Ithaca, NY	High Energy Physics	PHD	2013
University of Oregon	Eugene, OR	Searches for Supersymmetry and the Liquid Argon Calorimeters with the ATLAS experiment	Postdoctoral Fellow	2013 - 2018

(b) APPOINTMENTS -(see PAPPG Chapter II.C.2.f.(b))

2018 - present Assistant Physicist, Argonne National Laboratory, Lemont, IL

(c) PRODUCTS -(see PAPPG Chapter II.C.2.f.(c))

Products Most Closely Related to the Proposed Project

1. ATLAS Collaboration. Search for a scalar partner of the top quark in the all-hadronic $t{\bar{t}}$ plus missing transverse momentum final state at $\sqrt{s}=13$ TeV with the ATLAS detector. Eur. Phys. J. C. 2020; 80(2020):737. Available from: https://arxiv.org/abs/2004.14060 DOI: 10.1140/epjc/s10052-020-8102-8
2. Benjamin D, Chekanov S, Hopkins W, Li Y, Love J. Automated detector simulation and reconstruction parametrization using machine learning. JINST. 2020 May; 15(5):P05025–P05025. Available from: https://arxiv.org/abs/2002.11516 DOI: 10.1088/1748-0221/15/05/p05025
3. ATLAS Collaboration. Searches for third-generation scalar leptoquarks in $\sqrt{s}=13$ TeV pp collisions with the ATLAS detector. JHEP. 2019; 6(2019):144. Available from: http://dx.doi.org/10.1007/JHEP06(2019)144 DOI: 10.1007/jhep06(2019)144
4. ATLAS Collaboration. Summary of searches for dark matter and dark energy using $\sqrt{s}$=13 TeV pp collisions with the ATLAS detector at the LHC. JHEP. 2019; 5(2019):142. Available from: https://arxiv.org/abs/1903.01400 DOI: 10.1007/jhep05(2019)142
5. ATLAS Collaboration. Search for a scalar partner of the top quark in the jets plus missing transverse momentum final state at $\sqrt{s}=13$ TeV with the ATLAS detector. JHEP. 2017; 12(2017):085. Available from: https://arxiv.org/abs/1709.04183 DOI: 10.1007/jhep12(2017)085

Other Significant Products, Whether or Not Related to the Proposed Project

1. ATLAS Collaboration. ATLAS Run 1 searches for direct pair production of third-generation squarks at the Large Hadron Collider. Eur. Phys. J. C. 2015; 75(2015):10. Available from: http://arxiv.org/abs/1506.08616 DOI: 10.1140/epjc/s10052-015-3726-9
2. ATLAS Collaboration. ATLAS Liquid Argon Calorimeter Phase-I Upgrade Technical Design

Report. CERN. 2013. Available from: https://cds.cern.ch/record/1602230

3. CDF Collaboration. Search for $B_s^0\to\mu^+\mu^-$ and $B^0\to\mu^+\mu^-$ Decays with CDF II Full Data Set. Phys. Rev. D. 2013; 87(2013):072003. Available from: http://arxiv.org/abs/1301.7048 DOI: 10.1103/physrevd.87.072003
4. CDF Collaboration. Search for $B_s^0\to\mu^+\mu^-$ and $B^0\to\mu^+\mu^-$ Decays with CDF II. Phys. Rev. Lett.. 2011; 107(2011):191801. Available from: https://arxiv.org/abs/1107.2304 DOI: 10.1103/PhysRevLett.107.191801

(d) SYNERGISTIC ACTIVITIES -(see PAPPG Chapter II.C.2.f.(d))

1. April 2020-present: SUSY Strong Production Subgroup convener. Reviewed SUSY Strong analyses for unblinding approval and preparation for publication.
2. August 2020-present: member of Geant4 Optimization Task Force. Studied sources of computational bottlenecks of the ATLAS implementation of Geant4. Also studied possible ML and non-ML based methods to reduce the computational cost of Geant4.
3. 2018-present: PI for the Argonne ATLAS Aurora Early Science Project. Preparing both an ATLAS ML workload, flavor tagging with uncertainty quantification, and standard workload, event generation with MadGraph, for use on the upcoming Aurora supercomputer. Madgraph is being prepared with CERN collaborators to make use of GPU resources which will make up a significant part of future computing resources.
4. April 2020-present: Snowmass topical group co-convener for the Experimental Algorithm Parallelization group. Prepare a summary document to be used as input for the final Snowmass Computational Frontier report. The group is focused on non-simulation and non-ML algorithms used in various experiments and that will need to be adapted for use on future computing resources.
5. 2014-2020: ATLAS SUSY Stop Search Analysis Team contact. Co-lead late Run 1 and all Run 2 searches for the supersymmetric top partner in the all-hadronic final state.