Wei Shi

CONTACT INFORMATION

CERN Build. 32, 4-A05
1211 Geneva 23
+33 689534550

weishi@rice.edu
https://weishi10141993.github.io
https://gitlab.cern.ch/wshi

EDUCATION

Rice University, Houston, USA

Ph.D. Physics and Astronomy, June 2020 (estimate)

- Thesis: *A Model Independent Search for BSM Bosons Decaying into Muon Pairs*

M.S. Physics and Astronomy, December 2017

- Proposal: *An Application of Multivariate Analysis to the EMTF p_T Look-Up-Table and Improvements to Dark Sector Searches*

Zhejiang University, Hangzhou, China

B.S. Physics, May 2015

- Thesis: *New Chalcogenide Materials Research*

EXPERIENCE

Rice University

Graduate Student 08/2015-Now

- Level-1 (L1) endcap muon trigger improvement
  - Regression and classification on muon transverse momentum (p_T) using boosted-decision-trees and k-nearest-neighbor algorithms
- Prompt analysis
  - Single/double muon trigger efficiency and rate reduction
  - Timing synchronization of local charged tracks in cathode strip chambers
  - Muon track building performance and p_T resolution
  - Endcap muon track finder analyzer development

Research Assistant 05/2016-Now

- $MSSM + U(1)_D$ model implementation in $FeynRules2.0$
- Muon anomalous magnetic moment interpretation using CMS Run 2 data
- Miscellaneous
  - High level trigger (HLT) control paths implementation
  - Muon identification, isolation and trigger scale factor study
  - Analysis analyzer development

CERN, Geneva, Switzerland

CMS Collaboration Associate Member 06/2017-09/2018

- Operations
  - L1 trigger on-call expert
  - L1 endcap muon trigger on-call expert
  - Data acquisition shifter
  - Central shift leader
  - Trigger shifter

- HLT L3 muon outside-in reconstruction algorithm optimization
- L1 trigger on-line control and monitor software development
- L1 trigger analyzer development

UC Davis Crocker Radiation Laboratory, Davis, USA
Research Assistant 04-05/2017
- Total irradiation and single event upset test with proton beam for muon port card, including FPGA, EPROM, flash memory, and optical receiver

Texas A&M University, College Station, USA
Visiting scholar 10/2016-09/2018
- MC production of Dark SUSY and NMSSM

Additional Experience

Rice University
Teaching Assistant 01/2016-06/2017
- PHYS 126 General Physics II (with Lab, E&M and optics)
- PHYS 526 Statistical Mechanics
- PHYS 201 Modern Physics

Citizens School Program, Houston
Teacher 01/2017-05/2017
- Design *Fun with Physics* program for middle school students
  - Give a 75-minute lecture on the waves topic for a class of 25 students
  - Perform hands-on experiments for one semester

Quantum Transport Lab, Rice University
Summer Exchange Intern (undergraduate) 07-09/2012, 2014
- Critical temperature measurement in cryogenic transport system
- Real-time control and read-out over common laboratory instruments
- Temperature-resistance calibration for thermometer CX-1050-AA
- 2D material fabrication using magnetron sputtering and photolithography

Superconducting Quantum Circuit Group, Zhejiang University
Intern (undergraduate) 06/2013-06/2014
- Study quantum non-demolition measurement in superconducting circuits
- Microwave circuit system design, test and calibration

Rice Chinese Students and Scholars Association, Houston
Treasurer 05/2016-05/2017
- Funds and grants application
- Expenses reimbursement and audition

Selected Publications

[1] *Boosted Decision Trees in the Level-1 Muon Endcap Trigger at CMS*, CMS Conference Report 2017/357.

[2] *Search for Beyond the Standard Model New Light Boson Decaying into Muon Pairs at CMS*, HIG-18-003

Selected Presentations

[1] *2018 EMTF Algorithm Changes Proposal*, L1 DPG Meeting, CERN, May 14, 2018

[2] *Muon Trigger Status for 2018*, CMS Week, CERN, Apr 17, 2018

[3] *EMTF Studies on Reconstructed Muons*, L1 DPG Meeting, CERN, Apr 9, 2018

Language

Software

- Familiar: ROOT, C
- Intermediate: Python, Bash, MATLAB, Java, Polymer, CSS, LabVIEW, LaTeX

Hardware

- Basic: Keil μVision IDE, Altera Quartus II, Xilinx iMPACT

Speaking

- Familiar: Chinese, English
- Basic: French