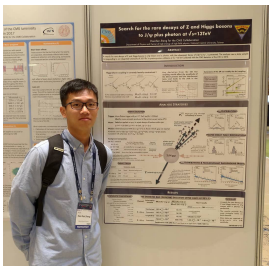
Curriculum Vitae

Personal Information



Name Hao-Ren Jheng (Chinese: 鄭皓仁)

Date of Birth *June 21th, 1995*

Address No. 200, Jichang 2nd St., Ji'an Township, Hualien County, Taiwan

Mobile +886 934387977

Email haorenjheng21@gmail.com

Education

Sep 2017 – Jun 2019 **National Central University** *Jhongli, Taiwan*
M.S in Physics
Title of the M.S thesis: *Search for rare decays of Z and Higgs bosons to J/ψ and a photon in proton-proton collisions at $\sqrt{s} = 13$ TeV*

Sep 2013 – Aug 2017 **National Central University** *Jhongli, Taiwan*
B.S. in Physics

Sep 2010 – Jun 2013 **National Hualien Senior High School** *Hualien, Taiwan*

Experiences

Jun 2019 **Teaching assistant** – *Machine Learning in High Energy Physics*

- Providing students clear instructions to learn ROOT (a scientific software toolkit widely used in experimental particle physics) and TMVA (Toolkit for Multivariate Data Analysis)
- Aiding students on building up analysis workflow to deal with tasks at hand
- Helping students on connecting the physical concepts to the logic in programming language

Sep 2018 – Dec 2018 **Research assistant** based at CERN (European Organization for Nuclear Research)

- Taking shifts in the beamtest for future upgrade of Compact Muon Solenoid (CMS), High Granularity Calorimeter (HGCal), hold at CERN to monitor the data taking
- Studying on the energy reconstruction and electron identification using BDT (Boosted Decision Tree) method
- Electron veto efficiency and scale factor measurement

Sep 2017 – Jun 2018 **Teaching assistant** – *Experimental Method and Experimental Physics*

- Guiding students on designing experimental setup, building up workflow in an experiment, analyzing data, and interpreting results
- Instructing students on giving oral presentation and writing report in paper form
- Finding experiments that fit students' ability as course material

Jul 2015 – Aug 2015 **Summer student** – *UCAT (University Consortium of ALMA–Taiwan) Summer Student Program*

- Studying the star formation efficiency in Centaurus A with information from ALMA (Atacama Large Millimeter/Submillimeter Array) and Spitzer Space Telescope

Selected publications & Oral presentations

Papers

1 **Search for rare decays of Z and Higgs bosons to J/ψ and a photon in proton-proton collisions at $\sqrt{s} = 13$ TeV**, Eur. Phys. J. C 79 (2019)94, CMS-SMP-17-012, CERN-EP-2018-250, DOI: 10.1140/epjc/s10052-019-6562-5, [arXiv:1810.10056]

- Serving as the contact person in CMS internal review process

2 **Search for the decay of a Higgs boson in the $\ell\ell\gamma$ channel in proton-proton collisions at $\sqrt{s} = 13$ TeV**, JHEP 11 (2018) 152, CMS-HIG-17-007, CERN-EP-2018-092, DOI: 10.1007/JHEP11(2018)152, [arXiv:1806.05996]

- Mainly working on the trigger efficiency of the Higgs Dalita decay channel and the background model

3 **Beam tests of prototype silicon modules for the CMS High Granularity Endcap Calorimeter**, JINST 13 (2018) no.10, P10023, FERMILAB-CONF-18-595-CMS, DOI: 10.1088/1748-0221/13/10/P10023

- Taking shifts in beamtest to monitor the data taking

Poster presentations

1 **Rare decays of the Higgs boson in the $\ell\ell\gamma$ final states in pp collisions at $\sqrt{s} = 13$ TeV**, 2019 Annual Meeting of the Physical Society of Taiwan, National Chiao Tung University, Hsinchu, Taiwan [link to pdf]

2 **Search for Z and Higgs boson decaying into J/ψ + photon in pp collisions at 13 TeV**, 39th International Conference on High Energy Physics (ICHEP) 2018, Seoul, Korea [link to pdf]

3 **Study of Z and Higgs boson decaying into (J/ψ)γ in pp collisions at $\sqrt{s} = 13$ TeV**, 2018 Annual Meeting of the Physical Society of Taiwan, National Taiwan University, Taipei, Taiwan [link to pdf]

4 **Study of a Higgs boson decaying into a J/ψ+ γ in pp collisions at $\sqrt{s} = 13$ TeV**, Annual Meeting of the Physical Society of the Republic of China (Taiwan) 2017, Tamkang University, Taipei, Taiwan [link to pdf]

5 **Study of a Higgs boson decaying into J/ψ + γ in pp collisions at $\sqrt{s} = 13$ TeV**, Annual Meeting of the Physical Society of the Republic of China 2016, National Sun Yat-Sen University, Kaohsiung, Taiwan [link to pdf]

Oral presentations

1 **Searches for rare decays of the Higgs boson at CMS**, Phenomenology Symposium 2019, University of Pittsburgh [link to my talk or pdf]

2 **Study of Higgs and Z boson decaying into J/ψ+ γ in pp collisions at $\sqrt{s} = 13$ TeV**, Taiwan Korea joint workshop on particle physics 2017, Seoul National University [link to pdf]

Internal note in CMS Collaboration

1 **Search for the Z and Higgs boson decaying into J/ψ + γ in pp collisions at $\sqrt{s} = 13$ TeV with 2016 data**, CMS AN-2017/283

2 **Search for Higgs boson Dalitz Decay to $\gamma^*\gamma \to \mu\mu\gamma$ at $\sqrt{s} = 13$ TeV with 2016 data**, CMS AN-2016/493

Talks given in the CMS meetings

Pre-approval and approval talks for one analysis, Higgs physics (HIG) and standard model physics (SMP) analysis group and subgroup meetings, electron-photon object physics group meeting

Awards

2017, 2019 **The Phi Tau Phi Scholastic Honor Society of the Republic of China (2 times)**
Awarded to up to 1% of undergraduate graduands or 3% of master's graduands in every domestic university that are excellent in academic performance as well as moral conduct

2018 **FOCI Fiber Optic Communications, Inc. Scholarship**
Financial assistance for students studying, doing research, and attending conferences abroad

2017 **Excellent Poster Award**, Annual Meeting of the Physical Society of the Republic of China (Taiwan) 2017, Tamkang University, Taipei, Taiwan

2017 **SYSAGE Technology Scholarship**
Financial assistance for students studying, doing research, and attending conferences abroad

2016 **Zhu-Shun Yi He Qin Scholarship**
Awarded to twelve students with most outstanding academic performance in the school (two students in College of Science)

2013 – 2017 **Academic Excellence Award (7 times)**
Awarded to students with the top 5% GPA for that semester

Skills

Language: Chinese (native), English

Programming/Software: C, C++ (ROOT), Python (including PyROOT), LaTeX, Markdown