



Curriculum Vitae

Jia Jian TEOH

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PROFESSIONAL EXPERIENCES

2018 -2021 **Postdoctoral Researcher** - National Institute for Subatomic Physics (Nikhef)

Achievements:

- Main developer of the ATLAS Strip Inner Tracker (ITk) DAQ system with the Front-End Link eXchange (FELIX).
 - Developed DAQ software library (YARR) for ITk Strip demonstrator for both the prototype ASICs (HCC130 and ABC130) and the pre-production version ASICs (HCC* and ABC*)
- Drafted the initial top-level design of the FELIX Phase-II firmware based on DAQ requirements from ATLAS sub-detectors.
- Main contributor to the design of an adapter board for ATLAS ITk Strip module and CERN's Versatile Link Demonstrator Board Plus (VLDB+) – the evaluation kit for the new radiation-hard Versatile Link ecosystem.
- Lead analyst and author of the lepton (non)-universality measurement in W decays using ATLAS Run-2 low- μ data.

2007 - 2010 **Aircraft Design Engineer (System and Structures Dept.)** – AVCEN Limited Malaysia, PATIMAS Technology Center, Kuala Lumpur, Malaysia.

Responsibilities:

- Held full responsibility in STOL aircraft wing, flap and aileron structures design.
- Prepare drawings, datasets, reports, specifications, schematics, and supporting data.
- Integrate technical, cost, value, and safety considerations into the product definition to comply with customer, regulatory, and company requirements.
- Evaluate designs and perform trade studies for performance, structural adequacy, cost effectiveness, and regulatory compliance.

Feb – May 2006 **Aircraft Engineer Trainee/Internship** – KL Airport Services (KLAS), Kuala Lumpur International Airport (KLIA), Malaysia.

CORE TECHNICAL SKILLS

Languages: C++, Python, TensorFlow-Keras, Bash

Tools: Git, Xilinx Vivado, ROOT, Latex

EDUCATION

April 2013 – April 2017 – **Ph.D. in Experimental High Energy Physics** – Osaka University, Osaka, Japan.

Supervisor: Prof. Kazunori Hanagaki

Thesis: Search for Dark Matter Produced in Association With a Higgs Boson Decaying to Two Bottom Quarks at the ATLAS Experiment

Abstract: This thesis reports on a search for dark matter pair production in association with a Higgs boson decaying to a pair of bottom quarks, using data from 20.3 fb^{-1} of pp collisions at a center-of-mass energy of 8 TeV collected by the ATLAS detector at the LHC. The decay of the Higgs boson is reconstructed using a large-radius jet. B-tagging is performed by using track jets. The observed data are found to be consistent with the expected Standard Model backgrounds. Exclusion limits are presented for the mass scales of various effective field theory operators that describe the interaction between dark matter particles and the Higgs boson.

April 2011 – April 2013 – **M.Sc. in Experimental High Energy Physics** – Osaka University, Osaka, Japan.

Supervisor: Prof. Kazunori Hanagaki

Thesis: Development of SiTCP Based Readout System for the ATLAS Pixel Detector Upgrade

Abstract: To meet the tight requirements of the future High Luminosity-Large Hadron Collider (HL-LHC) upgrade, a new pixel Front-End (FE) Integrated Circuit (IC) called FE-I4 has been developed. My goal is to develop a compact, versatile and fast multi-chip readout system. This thesis describes the design of the firmware, the software and the hardware chain. Various functionalities for testing FE-I4 are elucidated in detailed. The performance of the readout system was evaluated.

May 2002 – Sept 2007 – **B.Eng. in Aeronautics Engineering** – University Teknologi Malaysia (UTM), Johor, Malaysia (1st Class Honour CGPA: 3.71/4.00)

Supervisor: Prof. Abas Abdul Wahab

Thesis: Coaxial Helicopter In Steady Vertical Flight and Hovering

Abstract: This thesis reports on the design and construction of a coaxial helicopter. Its aerodynamic performance was evaluated.

TEACHING / OUTREACH EXPERIENCES

Oct 2018 & 2019 – Nikhef Open Day: Volunteer to present ATLAS experiments to the general public and to answer questions from visitors.

May 2011 – Oct 2011 – Laboratory Teaching Assistant – Dept. of Physics, Osaka University.

Course: Rutherford Scattering Experiment.

Responsibility: Mentored ~20 undergraduate students on experiment procedures. Demonstrate instrument usage and teach data analysis/programming techniques.

May 2012 – Laboratory Teaching Assistant – Dept. of Physics, Osaka University.

Oct 2012

Course: Rutherford Scattering Experiment.

Responsibility: Mentored ~20 undergraduate students on experiment procedures. Demonstrate instrument usage and teach data analysis/programming techniques.

AWARDS

2013-2016 Japanese Government (Monbukagakusho: MEXT) Scholarship

2012 Lawrence Berkeley National Laboratory (LBNL) Exchange Visitor Programs

2010-2013 Japanese Government (Monbukagakusho: MEXT) Scholarship

PUBLICATIONS, CONFERENCE NOTES AND PROCEEDINGS

Conference Note Lepton (non)-universality in W decays with ATLAS Run 2 low- μ data. ANA-STDM-2020-XX-INTX (to-be-published)

ATLAS Note ATLAS FELIX firmware Phase-II Upgrade: Firmware specifications (ATL-INT-XXXX-XX-DRAFT)

Journal Publication ATLAS Collaboration, “Search for dark matter produced in association with a Higgs boson decaying to two bottom quarks in pp collisions at $\sqrt{s}=8$ TeV with the ATLAS detector,” Phys. Rev. D93, no. 7, 072007 (2016), [arXiv:1510.06218 [hep-ex]].

Proceeding J. J. Teoh, K. Hanagaki, Y. Ikegami, Y. Takubo, S. Terada and Y. Unno, “Development of readout system for FE-I4 pixel module using SiTCP,” Nucl. Instrum. Meth. A 731, 237 (2013). doi:10.1016/j.nima.2013.05.161

TALKS, CONFERENCES AND WORKSHOPS

Dec 2020 “ITk Strip DAQ: YARR+NetIO + FELIX (IpGBT)”, ATLAS Upgrade Week (virtual)

Jan 2019 “Phase-II FELIX Firmware Blocks Design”, ATLAS ITk Week, CERN.

Nov 2018 “ITk Strip Demonstrator – Status”, ATLAS Upgrade Week, CERN.

Sept 2018 “ITk Software: Strips Implementation and Tests”, ATLAS ITk Week, Oxford Uni., UK.

Feb 2016 “Mono-Higgs: An Innovative Way to Search For Dark Matter at ATLAS” (poster) Lake Louise Winter Institute 2016, Alberta, Canada.

Sept 2015 “Search for Dark Matter produced in association with a Higgs boson decaying to two bottom quarks”
Physical Society of Japan (JPS) Annual Meeting, Osaka City University, Osaka, Japan.

Sept 2014 “Boosted $t\bar{t}$ Cross Section ($\sigma_{t\bar{t}}$) Measurement in All-Hadronic Channel at LHC-ATLAS”
Physical Society of Japan (JPS) Fall Meeting, Saga University, Saga, Japan.

March 2014 “Simulation study to identify b-jet from gluon splitting in ATLAS Experiment”
Physical Society of Japan (JPS) Annual Meeting, Tokai University, Tokyo, Japan.

- Sept 2013** “Development of Multi-chip Readout System for ATLAS FE-I4 Pixel Module Using SiTCP”
Physical Society of Japan (JPS) Fall Meeting, Kochi University, Kochi, Japan.
- March 2013** “Development of SiTCP Based Readout System for Pixel Detector Upgrade in ATLAS Experiment”
Physical Society of Japan (JPS) Annual Meeting, Hiroshima University, Hiroshima, Japan.
- Sept 2012** “Development of Readout System of FE-I4 Pixel Module Using SiTCP” (Poster)
International Workshop on Semiconductor Pixel Detectors for Particles and Imaging (PIXEL2012), Fukushima, Japan.
- Sept 2012** “Development of SiTCP Based Readout System for Pixel Detector Upgrade in ATLAS Experiment”
Physical Society of Japan (JPS) Fall Meeting, Kyoto Sangyo University, Kyoto, Japan.
- March 2012** “Development of SiTCP Based Readout System for Pixel Detector Upgrade in ATLAS Experiment”
Physical Society of Japan (JPS) Annual Meeting, Kwansai Gakuin University, Hyogo, Japan.

REFERENCES

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5. Prof. Kazunori Hanagaki

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