

Curriculum Vitae

Dr. Edwin Yun Sang CHOW

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Citizenship: Hong Kong

Location: Hong Kong

Languages: English, Cantonese, Mandarin, Japanese

I am a particle physicist with 10+ years of experience in research at CERN, specializing in Standard Model measurements and searches for exotic physics. I have coordinated multi-institutional teams in complex data analyses, leading efforts in Standard Model measurements of D meson production, searches for lepton flavour violating τ decays, and searches for heavy neutral leptons. In addition to data analysis, I also have extensive experience in trigger validation, electronic readout system upgrades, and supervision of student projects focused on silicon detector upgrades.

Employment

- Research Assistant Professor** 2026–Present
Hong Kong University of Science and Technology, Hong Kong
 - Postdoctoral Researcher** 2023–2026
Radboud University, Nijmegen (Associated with Nikhef)
Supervisor: Prof. Mengqing Wu
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Education

- Doctor of Philosophy in Physics [1]** 2024
Nikhef, Amsterdam (Associated with Radboud University)
Supervisors: Prof. Olga Igonkina, Prof. Nicolo De Groot, Dr. Peter Kluit
 - Master of Philosophy in Physics [2]** 2018
The Chinese University of Hong Kong, Hong Kong
Supervisors: Prof. Kirill Prokofiev, Prof. Luis Flores-Castillo
 - Bachelor of Science in Physics (First Class Honours)** 2015
The Chinese University of Hong Kong, Hong Kong
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Research Projects

- Searches for Heavy Neutral Lepton (HNL) in WW scattering using $\tau\tau$ final states [3]** 2023–2026
Postdoctoral research *Submitted to PRL*
 - Analysis contact, main analyst, editor, framework developer
 - Analysis proposal, general methodology, workflow design and theory exploration
 - Trigger validation, uncertainty treatment and coordination with other $\tau + X$ analyses
 - Supervision of multiple bachelor and PhD students
 - World's first measurement of τ -HNL coupling above several TeV
- HL-LHC FELIX Readout System Development** 2024–2025
Postdoctoral research
 - Validation of high-throughput data transmission protocols via Ethernet using DAQ software
 - Performance evaluation of circular DMA buffer for customized PCIe FELIX cards
- Searches for Lepton Flavour Violation in $D_s^\pm \rightarrow \tau^\pm(\mu\mu\mu)\nu$ Decay [4, 5]** 2018–2024
Ph.D. thesis research

- Analysis contact and framework developer
- Normalization and sensitivity estimate using $D_s^\pm$ meson measurements
- Projection of run 2 and run 3 results
- **Measurement of $D^\pm$ and $D_s^\pm$ Meson Production [6]** 2018–2024
Ph.D. thesis research
 - Analysis contact, main analyst, main editor, framework developer
 - Overall analysis design, trigger choice, vertex studies and uncertainty propagation
 - Construction of fit models to extract D meson yield and production b -fraction
 - Evaluation of NLL prediction with theorists and comparison with measurements
- **Searches for CP–Violation in $H \rightarrow \tau\tau$ Decay [7]** 2016–2017
M.Phil. thesis research
 - Early sensitivity study of the beam spot constraint and impact parameters of tau tracks
 - Validation of CP-sensitive variables constructed using the impact parameter method
- **Optimization of Calorimeter Muon Identification[8]** 2015–2016
ATLAS qualification project
 - Simulation and performance evaluation of muon and pion MC events
 - Improvement of identification efficiency and purity via granularity improvements
- **Study of e^+ Spectrum Produced by Dark Matter Annihilation in Clusters of Galaxies** 2014–2015
B.Sc. final year project
 - Simulation of positron produced by b -quark and their spectral evolution in propagation
- **Study of Spin and Parity of the Higgs Boson Using the $H \rightarrow ZZ^* \rightarrow 4l$ Decay** 2014
CERN Summer student Programme
 - Construction of BDT for distinguishing the spin-0 and spin-2 models of the Higgs Boson

Supervision

- **Development of Neural Network for Heavy Neutral Lepton Searches** 2025–Present
Daily supervision of Bachelor project (Sven Tammerijn)
 - Development of mass-independent neural network
 - Performance evaluation against on-going analysis
 - **Searches for Heavy Neutral Lepton in ssWW scattering** 2023–Present
Daily supervision of PhD project (Snigdho Chakraborty)
 - Background composition study and identification of leptons faking as taus
 - Fits and limit evaluation using multiple control regions
 - **Phase-2 Upgrade: HGTD Test Beam Analysis** 2023–2025
Daily supervision of master project (Marcello Pozzessere)
 - Proposal of using pulse-height-timing 2D plots to identify beam reflections
 - Categorizing datasets to study effect of different radiation and bias-voltage
 - **Phase-2 Upgrade: ITK-HGTD Simulation For 4D Tracking [9]** 2023–2024
Daily supervision of master project (Saskia Okkerman)
 - Grid and ATHENA software support
 - Testing muon performance with the latest 4D tracking algorithm using upgraded detectors
 - **Topology Studies of Heavy Neutral Lepton Processes in $\tau\tau$ Final State [10]** 2023–2024
Daily supervision of bachelor project (Ruixiang Li)
 - First truth study within ATLAS to investigate the $\tau\tau$ channel
 - Kinematic variable construction at truth level and comparison against reconstruction
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Teaching Experience

- **Teaching Assistant** 2018–2022
Radboud University
 - Undergraduate courses : Subatomic Physics, Introduction to C++
 - Postgraduate courses: Advanced Programming, Data Analysis with programming
 - **Teaching Assistant** 2015–2017
The Chinese University of Hong Kong
 - Special tutoring: Bachelor students with special needs
 - Undergraduate courses : Engineering physics, Relativity
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Recent Conference Talks

- **Heavy flavour physics in ATLAS and CMS** 2026
Moriond EW, Italy
 - **HNL search with τ final states** 2025
ATLAS Tau CP Workshop, CERN
 - **B-Physics and Light States WG report** 2024
ATLAS Week, Greece
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Scholarships and Certificates

- **Professor Charles K. Kao Research Exchange Scholarships** 2014
The Chinese University of Hong Kong
 - **CN Yang Scholarship** 2012–2013
The Chinese University of Hong Kong
 - **Dean's Honours List** 2012–2013
The Chinese University of Hong Kong
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Technical Skills

- **Software Engineering**
 - C++, C, Python, Bash, Git, CI/CD
 - **Data Science and Statistical Analysis**
 - ROOT, RooFit, RooUnfold, Mathematica, NumPy, Pandas, TensorFlow, Machine Learning (BDT, DNN)
 - **ATLAS Specific**
 - Athena: Simulation, muon reconstruction, vertex reconstruction, analysis frameworks
 - Operation: Run control desk, trigger desk, ROS on-call
 - Data Acquisition: FELIX and tdaq software
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Referrers

- **Prof. Karolos Potamianos** (Karolos.Potamianos@warwick.ac.uk)
Warwick University
 - **Prof. Miriam Watson** (miriam.watson@cern.ch)
University of Birmingham
 - **Prof. Mengqing Wu** (Mengqing.Wu@science.ru.nl)
Radboud University
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Thesis

- [1] Edwin Yun Sang Chow. “Measurement of D Meson Production”. PhD thesis. Radboud University, 2024. URL: <https://repository.cern/records/r7v1v-hey36>.
- [2] Yun Sang Chow. “Searches for CP-violation in $H \rightarrow \tau\tau$ decay and improvement of calorimeter muon identification with the ATLAS detector”. MA thesis. The Chinese University of Hong Kong, 2018. URL: <https://repository.lib.cuhk.edu.hk/en/item/cuhk-2188349>.

Expected Publications (Internal Links)

- [3] The ATLAS Collaboration. *Search for heavy Majorana neutrinos in same-sign $W^\pm W^\pm$ scattering events at $\sqrt{s} = 13$ TeV in $\tau\tau$ final states*. CDS record 2947179. 2025. URL: <https://cds.cern.ch/record/2947179>.

Selected Publications

- [4] The ATLAS Collaboration. “A search for lepton-flavour violating $\tau \rightarrow 3\mu$ decays with the ATLAS detector”. In: (Mar. 2026). arXiv: [2603.18099](https://arxiv.org/abs/2603.18099) [hep-ex].
- [5] The ATLAS Collaboration. “Prospects for lepton flavour violation measurements in $\tau \rightarrow 3\mu$ decays with the ATLAS detector at the HL-LHC”. In: (2018). URL: <https://cds.cern.ch/record/2647956>.
- [6] The ATLAS Collaboration. “Differential cross-section measurements of $D^\pm$ and $D_s^\pm$ meson production in proton-proton collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector”. In: *JHEP* 07 (2025), p. 086. DOI: [10.1007/JHEP07\(2025\)086](https://doi.org/10.1007/JHEP07(2025)086). arXiv: [2412.15742](https://arxiv.org/abs/2412.15742) [hep-ex].
- [7] The ATLAS Collaboration. “Measurement of the CP properties of Higgs boson interactions with τ -leptons with the ATLAS detector”. In: *Eur. Phys. J. C* 83.7 (2023), p. 563. DOI: [10.1140/epjc/s10052-023-11583-y](https://doi.org/10.1140/epjc/s10052-023-11583-y). arXiv: [2212.05833](https://arxiv.org/abs/2212.05833) [hep-ex].
- [8] The ATLAS Collaboration. “Muon reconstruction and identification efficiency in ATLAS using the full Run 2 pp collision data set at $\sqrt{s} = 13$ TeV”. In: *Eur. Phys. J. C* 81.7 (2021), p. 578. DOI: [10.1140/epjc/s10052-021-09233-2](https://doi.org/10.1140/epjc/s10052-021-09233-2). arXiv: [2012.00578](https://arxiv.org/abs/2012.00578) [hep-ex].

Supervised Works

- [9] Saskia Okkerman. *Timing at the ATLAS detector: Challenges and Possibilities of Track-Time Association*. May 2024. URL: <https://cds.cern.ch/record/2923166>.
 - [10] Ruixiang Li. *Investigation on topology of HNL $\tau\tau$ events*. Tech. rep. Geneva: CERN, 2024. URL: <https://cds.cern.ch/record/2909120>.
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