Wee Don Teo — Curriculum Vitae

CONTACT INFORMATION

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EDUCATION

Ph.D. Physics, *Cornell University* **January, 2013**

Thesis: *Search for Supersymmetry with b-quark Jets and Missing Transverse Energy in pp Collisions at* $\sqrt{s} = 7$ *TeV*
Advisor: Peter Wittich

M.Sc. Physics, *Cornell University* **June, 2010**
B.Sc. Mathematics and Physics, *University of Toronto* **May, 2007**

Graduated with High Distinction

RESEARCH

Compact Muon Solenoid (CMS) Experiment

Ph.D. Student, Cornell University **August, 2008 - January, 2013**

Physics Analysis

- Significant contributions to the first measurement of the top quark pair production cross section at CMS in the single-lepton decay channel with semi-leptonically decaying b quarks, including b quark identification optimization, background determination, and selection efficiency/systematic error estimation.
- Major contributions to the search for new physics with final-state topologies enriched in b quarks, including data-driven estimates of the main backgrounds and the determination of systematic errors on the signal selection efficiency.
- Developed long-term analysis trigger strategy and designed custom utility triggers for the collection of data control samples and the measurement of trigger efficiencies.
- Played key role in the improvement of the performance of physics object reconstruction at the high-level trigger.

Detector Projects

- Developed comprehensive suite of data quality monitoring (DQM) visualization tools for the Level 1 and high-level trigger systems, particularly for the muon trigger systems. The tools provide the DQM shift crew real-time diagnostics on the performance of the trigger systems and create alarms when unexpected trigger rates are detected.
- Early contributions to the systematic study of the behaviour of trigger rates in an environment with a large number of simultaneous proton-proton collisions.

Tokai to Kamioka (T2K) Experiment

Undergraduate Research Project, University of Toronto **September, 2006 - May, 2007**

- Integral member of the Optical Transition Radiation (OTR) proton beam monitor group.
- Built simulation model of OTR beam monitor system in ASAP™ ray-tracing software framework.
- Studied effects of system misalignment and light efficiency on beam image.
- Evaluated impact of beam profile uncertainty on neutrino flux far/near ratio with T2K simulation.

Summer Research Assistant, York University **May, 2006 - August, 2006**

- Implemented pattern-finding methods for calibrating beam images using OTR system prototype and custom-made ray-tracing simulations.

Collider Detector at Fermilab (CDF) Experiment

Undergraduate Research Project, University of Toronto **January, 2006 - May, 2006**

- Studied various systematic uncertainties on the measurement of the top quark mass using the Neutrino Weighting Algorithm method in the dilepton decay channel.

Quantum Optics Group

Summer Research Assistant, University of Toronto **May, 2004 - August, 2004**

- Developed a Fabry-Perot interferometer for laser calibration.
- Repaired and improved functionality of laser diode modules.

Teaching

Cornell University, Ithaca, New York, USA

Teaching Assistant and Grader **August, 2007 - May, 2009**

- Fundamentals of Physics I and II
- Thermal Physics, Electricity & Magnetism for Engineers
- Relativistic Quantum Field Theory 1

Honors and Awards

NSERC (Natural Sciences and Engineering Research Council of Canada) Postgraduate Fellowship **2009 - 2012**

AAPT (American Association of Physics Teachers) Outstanding Teaching Assistant of the Year **2008**

Samuel Beatty In-Course Award, University of Toronto **2007**

Donald G. Ivey Scholarship in Physics, University of Toronto **2004**

Technical Skills

- Analysis Tools: Significant experience with ROOT data analysis framework. Past experience in LabVIEW, Maple, Mathematica, NumPy.
- Programming Languages: Proficient in C++. Past experience in Java, Perl, Python, Unix shell scripts. Experience with CVS, SVN, Git revision control systems.
- Operating Systems: Unix/Linux, Windows.
- Experience with batch submission systems, grid computing, cloud computing.
- Experience with handling large datasets (>100 TB) and in performing multivariate analyses.
- Basic experience with SQL databases

Selected Publications

- *Search for Supersymmetry in Events with b-quark Jets and Missing Transverse Energy in pp Collisions at 7 TeV,* CMS Collaboration, 2012, Phys. Rev. D 86 072010
- *Measurement of the $t\bar{t}$ Production Cross Section in pp Collisions at 7 TeV in Lepton + Jets Events Using b-quark Jet Identification,* CMS Collaboration, 2011, Phys. Rev. D 84 092004
- *CMS Data Processing Workflows during an Extended Cosmic Ray Run,* CMS Collaboration, 2010, JINST 5 T03006
- *Commissioning of the CMS High-Level Trigger with cosmic rays,* CMS Collaboration, 2010, JINST 5 T03005

Conference Talks, Workshops, and Schools

- *Search for new physics in events with b-jets and missing transverse energy in pp collisions at 7 TeV*, Parallel talk at APS 2012 April Meeting, 31 March to 3 April 2012, Atlanta, GA, USA
- *Monte Carlo Tools for Beyond the Standard Model Physics*, 22-24 March 2012, Cornell University, Ithaca, NY, USA
- *Excellence in Detectors and Instrumentation Technologies*, 13-24 February 2012, FNAL, Batavia, IL, USA