

Hai-Jun Yang - Curriculum Vitae

Personal Information:

Address: 450 Church Street, Department of Physics
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Education:

- 1995.9-2000.7 Ph.D in Physics, 2000, Joint education of
Swiss Federal Institute of Technology (ETH, Zurich)
Institute of High Energy Physics (IHEP, Beijing)
Advisors: Prof. Martin Pohl
Prof. Xiaowei Tang (Member of Chinese Academy of Sciences)
- 1991.9-1995.7 B.Sc., Hangzhou University (now Zhejiang University)

Employment and Research Experience:

- 2005.8 - present Research Scientist, University of Michigan
- Principal Investigator (PI) of a DOE/LANL subcontract grant for MiniBooNE at the University of Michigan, to develop MiniBooNE electron/pion identification based on Boosted Decision Trees for electron neutrino oscillation search and to discover one of major backgrounds from outside of MiniBooNE tank with Prof. Byron P. Roe etc.
 - ATLAS physics analysis and search tool development for, Diboson, SM $H \rightarrow WW$, $Z' \rightarrow t\bar{t}$, GMSB SUSY particle searches, and development of ATLAS electron identification, b-tagging using Boosted Decision Trees with Prof. Bing Zhou etc. ATLAS SM EW group production contact person
- 2000.8 - 2005.7 Research Fellow, University of Michigan
- Search for SM Higgs, MSSM Higgs with L3 detector at CERN/LEP
 - Development of an advanced pattern recognition technique, Boosted Decision Trees, for MiniBooNE physics analysis with Prof. Byron P. Roe and Prof. Ji Zhu (UM Statistics Department). This technique has wide applications at HEP data analysis to improve physics detection sensitivity.
 - Design and build high-precision optical alignment demonstration systems based on Frequency Scanned Interferometry (FSI) for ILC silicon tracker detector with Prof. Keith Riles.
 - Optimization of ILC tracker detectors through impact of tracker design on SM Higgs and SUSY particle measurements using various Monte Carlo simulations with Prof. Keith Riles.

Membership:

- 2001 - present: American Physical Society (APS)

Selected Publications

- ATLAS Collab. G. Aad et.al., *The ATLAS Experiment at the CERN Large Hadron Collider*, JINST 3:S08003,2008 (437 pp)
- ATLAS Collab. G. Ada et.al., *Expected Performance of the ATLAS Experiment, Detector, Trigger and Physics*, CERN-OPEN-2008-020, Geneva, 2008. I have made major contributions to ATLAS SM Diboson and $H \rightarrow WW$ analysis.
- **Hai-Jun Yang** et.al., *A Multivariate Training Technique with Event Reweighting*, JINST 3 P04004 (2008).
- MiniBooNE Collab., A.A. Aguilar-Arevalo et.al., *A Search for Electron Neutrino Appearance at the $\Delta m^2 \sim 1 \text{ eV}^2$ Scale*, Phys. Rev. Lett. 98, 231801, 2007.
- MiniBooNE Collab., A.A. Aguilar-Arevalo et.al., *Measurement of muon neutrino quasi-elastic scattering on carbon*, Phys. Rev. Lett. 100, 032301, 2008
- **Hai-Jun Yang**, Byron P. Roe, Ji Zhu, *Studies of Stability and Robustness for Artificial Neural Networks and Boosted Decision Trees*, Nucl. Instrum. & Meth. A 574:342-349,2007.
- **Hai-Jun Yang**, Sven Nyberg, Keith Riles, *High-precision Absolute Distance Measurement using Dual-Laser Frequency Scanned Interferometry Under Realistic Conditions*, Nucl. Instrum. & Meth. A 575:395-401,2007.
- M. Gataullin, S. Rosier, L. Xia and **H. Yang**, *Searches for gauge-mediated SUSY breaking topologies with the L3 detector at LEP*, AIP Conf. Proc. 903:217-220, 2007
- Byron P. Roe, **Hai-Jun Yang**, Ji Zhu, "Boosted decision trees, a powerful event classifier", Proceedings of PHYSTAT05 (Statistical Problems in Particle Physics, Astrophysics and Cosmology), Oxford, UK, September 12-15, 2005.
- **Hai-Jun Yang**, Byron P. Roe, Ji Zhu, *Studies of boosted decision trees for MiniBooNE particle identification*, Nucl. Instrum. & Meth. A555:370-85,2005.
- Byron P. Roe, **Hai-Jun Yang**, Ji Zhu, Yong Liu, Ion Stancu, Gordon McGregor, *Boosted decision trees as an alternative to artificial neural networks for particle identification*, Nucl. Instrum. & Meth. A543:577-584,2005.
- **Hai-Jun Yang**, Jason Deibel, Sven Nyberg, Keith Riles, *High-precision absolute distance and vibration measurement by using frequency scanned interferometry*, Applied Optics, Vol.44:3937,2005.
- **Hai-Jun Yang**, Sven Nyberg, Keith Riles, *Frequency Scanned Interferometry for ILC Tracker Alignment* Proceedings of 2005 International Linear Collider Workshop (LCWS 2005), Stanford, California, 18-22 Mar 2005, pp 0816.
- **Hai-Jun Yang**, Keith Riles, *Impact of tracker design on Higgs and slepton measurements*, Proceedings of 2005 International Linear Collider Workshop (LCWS 2005), Stanford, California, 18-22 Mar 2005, pp 0115.

- LEP Higgs Working Group, R. Barate et al., *Search for the standard model Higgs boson at LEP*, Phys. Lett. B565:61-75,2003.
- L3 Collab., *Search for neutral Higgs bosons of the minimal supersymmetric standard model in e^+e^- interactions at \sqrt{S} up to 209 GeV*, Phys. Lett. B545:30-42,2002.
- L3 Collaboration, *Standard model Higgs boson with the L3 experiment at LEP*, Phys. Lett. B517:319-331,2001.
- L3 Collab., *Measurement of the topological branching fractions of the τ lepton at LEP*, Phys. Lett. B519:189-198,2001.
- L3 Collab., *Production of single W bosons at $\sqrt{S} = 189$ GeV and measurement of $WW\gamma$ gauge couplings*, Phys. Lett. B487:229-240,2000.
- American Linear Collider Working Group, T. Abe et al., LINEAR COLLIDER PHYSICS RESOURCE BOOK FOR SNOWMASS 2001. SLAC-R-570 (May 2001) 436p. Available as hep-ex/0106055 (part 1), hep-ex/0106056 (part 2), hep-ex/0106057 (part3), and hep-ex/0106058 (part 4).

Recent Selected Presentations

- *WW and WZ detection at 10 TeV*, ATLAS SM Plenary Meeting, Sept. 3, 2009
- *Studies of Standard Model Physics and New Physics Signatures*, DoE Annual Review, Sept. 2, 2009
- *Discovery Potential of the SM Higgs Through $H \rightarrow WW$ Decay Mode at LHC with the ATLAS Detector*, DPF2009 of APS, Wayne State University, July 27-31, 2009
- *ATLAS B-tagging based on Boosted Decision Trees*, ATLAS Week at CERN, July 6-10, 2009
- *ATLAS Electron ID based on Boosted Decision Trees*, BNL Analysis Jamboree, Dec. 15-18, 2008
- *Search for New Physics at LHC with ATLAS Detector*, Seminar talk at Southern Methodist University, October 20, 2008.
- *Higgs Detection Sensitivity from Gluon-Gluon-Fusion $H \rightarrow WW$* , ATLAS Performance and Physics Workshop, CERN, October 1-3, 2008
- *ATLAS Electron Identification based on Boosted Decision Trees*, ATLAS Performance and Physics Workshop, CERN, October 1-3, 2008
- *Search for New Physics at LHC*, 2008 Weihai Summer Forum on Frontiers of High Energy Physics, July 8-12, 2008
- *Study of Diboson Physics with the ATLAS Detector*, APS April meeting at St. Louis, Apr.12-15, 2008

- *Search for New Physics at Present and Near Future*, Seminar talk at Boston University on Feb. 4, 2008.
- *Search for $H \rightarrow WW^{(*)}$ with ATLAS Detector Based on Boosted Decision Trees* at LHC New Physics Signature Workshop at U. of Michigan on Jan. 5-11, 2008.
- *Search for Neutrino Oscillation with MiniBooNE Detector*, colloquium at University of Nebraska, Lincoln on Nov. 29, 2007.
- *Impact of ILC Tracker Design on $e^+e^- \rightarrow HZ \rightarrow \mu^+\mu^-X$ Analysis* at ALCPG07 Workshop at Fermilab on Oct. 22-26, 2007.
- *ILC Tracker Alignment Based on Frequency Scanned Interferometry* at ALCPG07 Workshop at Fermilab on Oct. 22-26, 2007
- *MiniBooNE First Results (1998-2007)* at Institute of High Energy Physics in Beijing on July 20, 2007.
- *WW and ZW Analysis Based on Boosted Decision Trees* at ATLAS Trigger and Physics Week at CERN on June 4-8, 2007.
- *MiniBooNE Event Reconstruction and Particle Identification* at APS April Meeting in Jacksonville, Florida on April 14-17, 2007.
- *Search for $\nu_\mu \rightarrow \nu_e$ Oscillation with MiniBooNE* at The 6th KEK Topical Conference: Frontier in Particle Physics and Cosmology in Japan on Feb. 6-8, 2007.
- *Physics Analysis with Advanced Data Mining Techniques* at CCAST Workshop on TeV Physics and the LHC in Beijing on Nov. 6-10, 2006.
- *MiniBooNE Event Reconstruction and Particle Identification* at The Annual Meeting of APS/DNP in Nashville, Tennessee on Oct. 25-28, 2006.