

## Jane Nachtman

106 Van Allen Hall  
University of Iowa  
Department of Physics and Astronomy  
Iowa City, Iowa 52242  
Phone: 319-335-1844  
Email: jane-nachtman@uiowa.edu

## Curriculum Vitae

### Education and Professional History

#### Education

- Ph.D in Physics, University of Wisconsin, Madison, Wisconsin  
Advisor: Sau Lan Wu  
Dissertation: “Search for Charginos at  $\sqrt{s} = 161$  and  $172$  GeV with the ALEPH Detector”  
December, 1997
- M.S. in Physics, University of Wisconsin, Madison, Wisconsin  
May, 1993
- B.S. in Physics, University of Iowa  
May, 1991

#### Professional and Academic Positions

- 2007- : Associate Professor, University of Iowa
- 2006-2007: Scientist I (Wilson Fellow), Fermilab
- 2002-2006: Associate Scientist (Wilson Fellow), Fermilab
- 1997-2002: Post-Doctoral Researcher for Professor David Saltzberg, UCLA
- 1993-1997: Research Assistant, University of Wisconsin
- 1993: Teaching Assistant, University of Wisconsin
- Summer, 1991 and 1992: Research Assistant, Brookhaven National Laboratory
- 1988-1991: Undergraduate Research Assistant, University of Iowa

## Scholarship

### Publications

- 415 publications in refereed journals as a member of CMS, CDF and ALEPH Collaborations

### Selected Publications

- Publications for which I am one of the primary authors:
  - “*Searches for Supersymmetry and other New Phenomena at the Highest Energies*”, to be published in Reviews of Modern Physics, in preparation.
  - “*Latest Results from the Tevatron*” proceedings of the International Conference on Particle Physics, Istanbul, October 2008, in preparation.
  - “*Search for Exotic States in Exclusive  $B^+ \rightarrow J\psi\phi K^+$  Decays in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$  TeV*”, to be submitted to Phys. Rev. Lett., in preparation.
  - “*Collider Searches for Physics Beyond the Standard Model*,” proceedings of the Physics in Collision 2007 conference, to be published in *Acta Physica Polonica B*.
  - “*Inclusive search for anomalous production of high- $p(T)$  like-sign lepton pairs in  $p$  anti- $p$  collisions at  $s^{**}(1/2) = 1.8$ -TeV*,” Phys. Rev. Lett. **93**, 061802 (2004).
- Publications for which I provided oversight as the Exotic Physics group convenor on CDF, 2006 - 2007:
  - “*Search for the Higgs boson in events with missing transverse energy and  $b$  quark jets produced in proton-antiproton collisions at  $s^{**}(1/2)=1.96$  TeV*,” arXiv:0802.0432.
  - “*Search for New Heavy Particles Decaying to  $Z^0 Z^0 \rightarrow eee$  in  $p$ - $p$ bar Collisions at  $\sqrt{s} = 1.96$  TeV*,” arXiv:0801.1129 [].
  - “*Search for chargino-neutralino production in  $p$ - $p$ bar collisions at 1.96 TeV with high  $p_T$  leptons*,” arXiv:0711.3161 [].
  - “*Search for a high-mass diphoton state and limits on Randall-Sundrum gravitons at CDF*,” Phys. Rev. Lett. **99**, 171801 (2007).
  - “*Search for chargino-neutralino production in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$ -TeV*,” Phys. Rev. Lett. **99**, 191806 (2007)
  - “*Search for new physics in high mass electron-positron events in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$ -TeV*,” Phys. Rev. Lett. **99**, 171802 (2007).
  - “*Search for Direct Pair Production of Supersymmetric Top and Supersymmetric Bottom Quarks in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$ -TeV*,” Phys. Rev. D **76**, 072010 (2007).
  - “*Search for New Particles Leading to  $Z^+$  jets Final States in  $p\bar{p}$  Collisions at  $\sqrt{s} = 1.96$ -TeV*,” Phys. Rev. D **76**, 072006 (2007).
  - “*Search for heavy, long-lived particles that decay to photons at CDF II*,” Phys. Rev. Lett. **99**, 121801 (2007).
  - “*Inclusive search for new physics with like-sign dilepton events in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96$ -TeV*,” Phys. Rev. Lett. **98**, 221803 (2007).

- “Search for new physics in lepton + photon + X events with  $929 \text{ pb}^{(-1)}$  of  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96\text{-TeV}$ ,” Phys. Rev. D **75**, 112001 (2007).
  - “Search for anomalous production of multi-lepton events in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96\text{-TeV}$ ,” Phys. Rev. Lett. **98**, 131804 (2007).
  - “Combined D0 and CDF upper limits on standard-model Higgs-boson production,” arXiv:hep-ex/0612044.
  - “Search for W’ boson decaying to electron-neutrino pairs in p anti-p collisions at  $s^{*(1/2)} = 1.96\text{-TeV}$ ,” Phys. Rev. D **75**, 091101 (2007)
  - “Search for excited and exotic muons in the  $\mu\gamma$  decay channel in  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96\text{-TeV}$ ,” Phys. Rev. Lett. **97**, 191802 (2006).
  - “Search for large extra dimensions in the production of jets and missing transverse energy in p anti-p collisions at  $s^{*(1/2)} = 1.96\text{-TeV}$ ,” Phys. Rev. Lett. **97**, 171802 (2006).
- Papers for which I provided oversight as a member of the Godparent committee:
    - “Measurement of the Inclusive and Isolated Prompt Photon Cross Section at CDF”, to be submitted to Phys. Rev. Lett., in preparation.
    - “Search for Anomalous Production of Diphoton Events with Missing Transverse Energy at CDF and Limits on Gauge-Mediated Supersymmetry-Breaking Models,” Phys. Rev. D **71**, 031104 (2005).
    - “Search for pair production of scalar top quarks in R-parity violating decay modes in p anti-p collisions at  $s^{*(1/2)} = 1.8\text{-TeV}$ ,” Phys. Rev. Lett. **92**, 051803 (2004).

## Grants Awarded

- External
  - \* 2008 - 2009 Fermilab LPC convenor travel award, \$5,000
  - \* 2008 - 2009 Cost-of-Living Allowance for CMS research at CERN, \$15,000
- Internal
  - \* 2008 Junior Faculty Travel Award for Aspen Conference, \$1,000
  - \* 2008 ICRU Scholar Assistant Award for Jared Stewart, \$2500 for 2008-09 AY

## Selected Presentations

- “Introduction to the LPC Dijet Group”, *J-Term III CMS Workshop, January, 2009*
- “Latest Results from the Tevatron” *International Conference on Particle Physics, Istanbul, October 2008.*
- “Searches for New Physics in Dijet Resonances at CMS”, *meeting of the American Physical Society, St. Louis, Missouri, April 2008*
- “Searches for New Physics in Dijets at CMS”, *J-Term II CMS Workshop, January, 2008*
- “Measurement of the Drell-Yan Cross Section at CDF”, *Dilepton session of US CMS First Physics Workshop, October 2007*
- “Tevatron Searches for Physics Beyond the Standard Model”, *plenary talk at Physics in Collision Conference, June 2007.*

- “New Physics at the Tevatron”, *plenary talk at “The Hunt for Dark Matter, A Symposium on Collider, Direct, and Indirect Searches”, Fermilab, May 2007.*
- “Beyond the Standard Model at the Tevatron – Searches and Limits”, *invited talk at Aspen Winter Conference, February 2004.*

## Recent Conferences and Workshops

- February 2009 - “Large Class Summit 2009”, Univ. of Iowa – participant
- January 2009 - J-Term III Workshop for CMS, Fermilab – presenter
- January 2009 - Calorimeter Trigger Upgrade Meeting, Minneapolis MN – participant
- November 2008 - SLHC Upgrade Workshop, Fermilab – participant
- October 2008 - International Conference on Particle Physics, Istanbul – presenter
- September 2008 - “Peer Instruction Workshop”, Univ. of Iowa – participant
- April 2008 - meeting of the American Physical Society, St. Louis, MO – presenter
- January 2008 - Physics Analysis Tools and Reconstruction Workshop (CMS), CERN – participant
- January 2008 - J-Term II Workshop for CMS, Fermilab – presenter
- January 2008 - Aspen Winter Conference on Particle Physics, Aspen CO – organizer and session chair.
- November 2007 - SLHC Trigger Upgrade Workshop, Madison WI – participant
- October 2007 - US CMS First Physics Workshop, Fermilab – presenter
- June 2007 - Physics in Collision 2007 Conference, Annecy France – presenter
- June 2007 - Mini-Workshop on Early CMS Physics, Fermilab – participant
- May 2007 - The Hunt for Dark Matter, A Symposium on Collider, Direct, and Indirect Searches, Fermilab – presenter
- April 2007 - IEEE Real Time 2007 Conference, Fermilab – organizer
- January 2007 - ILC Detector Test Beam Workshop, Fermilab – participant

## Teaching Summary at University of Iowa

### Teaching Assignments

Sem./Year	Advisees		Courses Taught	
	Undrgrad	Grad.	Course No. and Title	Students
Fall 2007	0	0	29:192 Elementary Particles and Nuclear Physics	12
Fall 2008	1	1	29:081 Introductory Physics I	140
			29:132 Intermediate Lab	20
			29:133 Advanced Lab	1

## Students Supervised

Degree Objective	Student Name	Years	Outcome
Postdoc	Kai Yi	2008 -	in progress
Postdoc	Kwangzoo Chung	2008 -	in progress
Master's Candidate	James Wetzel	2008 -	in progress
Undergraduate	Jared Stewart	2008 -	in progress
Undergraduate	Matthew Banker	2008 -	in progress
Undergraduate	Lana Muniz	2007	Fermilab internship report
Undergraduate	Jia Liu	2007	Fermilab summer internship report
Undergraduate	Madelaine Greene	2007	Fermilab summer internship report
Undergraduate	Sebastian Wickenburg	2005	Fermilab summer internship report
Undergraduate	Matthew Lee	2004	Fermilab summer internship report
High School	Susan Dittmer	2005 - 2007	semi-finalist in Intel Science Talent Competition

## Service

### Professional

- Spring 2009 : Organizing committee for joint DPF and CSWP session “Women in Experimental High Energy Physics: Science and Career Paths”, April 2009 APS meeting
- May 2008 - present : Co-leader of CMS SLHC Calorimeter Upgrade Task
- January 2008 - present : Co-convenor of LPC Dijet Topology group, Fermilab
- Fall 2007 - Winter 2008: Served on organizing committee for Aspen Winter Conference on Particle Physics.
- Spring 2007 - Served on local organizing and Scientific Advisory Committee for Real Time 2007 Conference, Fermilab.
- Fall 2006 - Served on organizing committee of Exploring New Phenomena Workshop, Fermilab
- January 2006 - August 2007: Co-leader of CDF's Exotic Physics group
- August 2003 - March 2006: Served on Fermilab Colloquium Committee
- January 2000 - March 2005: Co-leader of CDF's Exotics Triggers/Datasets/Tools group
- June 1999 - Present: Served on CDF hardware and analysis review committees, as chair and committee member

### Department

- August 2008 - present : EO committee member

### Community Outreach

- November 2008: “The Large Hadron Collider”, Cafe Scientifique presentation, Iowa City.
- October 2008: “Discovery Potential of the Large Hadron Collider”, presentation for Explorations in Computing, Mathematics, and Science for the CMS Living-Learning Community, U of Iowa.
- February 2008: Physics demonstration for Women in Science and Engineering Girl Scout Badge Day, Iowa City.
- Spring 2005: Participated in Fermilab's World Year of Physics outreach program, presenting physics demonstrations to elementary students, Batavia and Geneva, Illinois.