Curriculum Vitae

Personal Information

Name:	Bob McElrath
Place of Birth:	Newport News, Virginia, USA
Date of Birth:	September 14, 1975
Address:	Dept. of Physics University of California One Shields Avenue Davis, CA 95616-8677 USA
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Education and Research

9/03–present	Post-Doctoral Researcher, University of California, Davis supervisor: John F. Gunion
6/00–9/03	Research Assistant, Teaching Assistant, System Administrator [Ph.D. Student] Dept. of Physics, Phenomenology Institute University of Wisconsin, Madison, USA advisor: Prof. T. Han
6/02	Theoretical Advanced Study Institute (TASI) University of Colorado at Boulder
Summer 1998, Summer 1999	Research Assistant, Aleph Experiment (CERN) Research Assistant, BaBar Experiment (SLAC) Dept. of Physics, Experimental High-Energy Physics University of Wisconsin, Madison, USA advisor: Prof. S. L. Wu
8/98	Van Vleck Fellowship Department of Physics University of Wisconsin, Madison, USA
9/94–6/98	Northwestern University [undergraduate] Majors: Physics, Math, Integrated Science Program Advisors: Heidi Schellman and David Buchholz Evanston, IL, USA
9/96–6/98	Teaching Assistant for ISP A01 (C++/Maple/Scientific and Numeric Methods) Integrated Science Program, Northwestern University
Summer 1997	Undergraduate Research Assistant, D0 Experiment (Fermilab) Dept. of Physics, Northwestern University supervisor: Heidi Schellman
9/96–6/97	Undergraduate Research Assistant Dept. of Electrical Engineering, Northwestern University supervisor: S. T. Ho

List of Publications

1) **CP Studies and Non-Standard Higgs Physics**
CERN Yellow Report CERN-2006-009 [arXiv: `hep-ph/0608079`]

2) **Light Neutralino Dark Matter in the NMSSM**
with J. Gunion, D. Hooper
Phys.Rev.D73:015011,2006 [arXiv: `hep-ph/0509024`]

3) **Invisible Quarkonium Decays as a Sensitive Probe of Dark Matter**
Phys.Rev.D72:103508,2005 [arXiv: `hep-ph/0506151`]

4) **The Higgs Sector in a $U(1)'$ Extension of the MSSM**
with T. Han and P. Langacker
Phys.Rev.D70:115006,2004 [arXiv: `hep-ph/0405244`]

5) **Loop Induced Decays of the Little Higgs: $H \to gg, \gamma\gamma$**
with T. Han, H. Logan, L. Wang
Phys.Lett.B563:191-202,2003, Erratum-ibid.B603:257-259,2004 [arXiv: `hep-ph/0302188`]

6) **Effects of Dimension-Six Operators on the SM Higgs Sector**
with V. Barger, T. Han, P. Langacker and P. Zerwas
Phys.Rev.D67:115001,2003 [arXiv: `hep-ph/0301097`]

7) **Phenomenology of the Littlest Higgs Model**
with T. Han, H. Logan and L. Wang
Phys.Rev.D67:095004,2003 [arXiv: `hep-ph/0301040`]

8) **Black hole evaporation with separated fermions**
with T. Han and G. D. Kribs
Phys.Rev.Lett.90:031601,2003 [arXiv: `hep-ph/0207003`]

9) **$h \to \mu^+\mu^-$ via Gluon Fusion at the LHC**
with T. Han
Published in Phys. Lett. B528:81-85,2002 [arXiv: `hep-ph/0201023`]

10) **Radion Effects on Unitarity in Gauge Boson Scattering**
with T. Han and G. D. Kribs
Published in Phys. Rev. D64:076003,2001 [arXiv: `hep-ph/0104074`]

Work In Progress

- Optimal Observables for Events with Missing Energy
with H.S. Cheng, J. Gunion, G. Marandella
- Effective Theories for Light Dark Matter
with D. Hooper
- Lorentz Violation in the Neutrino Sector from Higher Dimension Operators
with D. Mattingly
- The Phenomenology of Extended Higgs Scenarios with $> \mathbf{2}$ Doublets
with T .Han, P. Langacker
- Dynamics of the Cosmic Neutrino Background

Professional Activities

- Convener for the Little Higgs section of the CP Violation and Non-Standard Higgs working group (also a contributor to multiple sections)
- Referee for Physical Review D
- Local organizer for LHC Olympics activities
- Local seminar and journal club organizer
- Member, LHC / ILC Working Group
- Member, Quarkonium Working Group
- Member, American Association for the Advancement of Science
- Member, American Physical Society

Conference Participation

- Beyond the Standard Model Ultra-Mini Conference, 30 October - 4 November 2006, University of Edinburgh.
- B Factories and New Measurements, 13-14 September, 2006, KEK.
- International Workshop on Heavy Quarkonium 2006, June 27-30 2006, Brookhaven National Laboratory.
- PHENO 2005 Symposium, University of Wisconsin, Madison. May 15-17 2006.
- Argonne Workshop on Collider Physics, Argonne National Laboratory, May 7-12, 2006.
- Monte Carlo for Beyond the Standard Model (MC4BSM) Fermilab, March 20-21, 2006.
- Dark Matter 2006, Marriott Hotel, Marina del Rey, February 22-24, 2006.
- West Coast LHC Theory Network Stanford Linear Accelerator Center, February 3, 2006.
- Fermilab TeV Particle Astrophysics, 13-15 July, 2005.
- Argonne National Laboratory Theory Institute 2005: Supersymmetry, Extra Dimensions, and Higgs Bosons, May 9-13, 2005.
- PHENO 2005 Symposium, University of Wisconsin, Madison. May 2-4 2005.
- CP-Violating and Non-Standard Higgs workshop Stanford Linear Accelerator, 24-25 March, 2005
- PASCOS 2004 and Pran Nath Fest Northeastern University, Aug 16-22 (2004).
- Michigan String Phenomenology Conference University of Michigan, Ann Arbor. July 31-Aug 7 (2004).
- Victoria Linear Collider Workshop Victoria, B.C. July 28-31 (2004).
- PHENO 2004 Symposium, University of Wisconsin, Madison. April 26-28 (2004).
- KITP Workshop on Collider Physics Kavli Institute for Theoretical Physics, Santa Barbara, January 12-16 (2004)

- SUSY 2003: SUSY in the Desert: 11th Annual International Conference on Supersymmetry and the Unification of Fund amental Interactions, Tucson, Arizona, 5-10 Jun 2003.
- PHENO 2003 Symposium, University of Wisconsin, Madison. May 5-7 (2003).
- Theoretical Advanced Studies Institute University of Colorado, Boulder, June, 2002.
- Argonne National Laboratory Theory Institute 2002 September 9-13, 2002
- Argonne National Laboratory Theory Institute 2001 June 18-29, 2001

List of Talks

2/07 *Light Dark Matter in Quarkonium Decays*
Institute for High Energy Physics, Beijing University February 1, 2007

9/06 *Light Dark Matter in Quarkonium Decays*
B Factories and New Measurements 2006 KEK Laboratory, September 13-14, 2006.

6/06 *Invisible Quarkonium Decays*
International Workshop on Heavy Quarkonium Brookhaven National Laboratory, June 27-30, 2006.

5/06 *Measuring Mass and Spin at Colliders*
Pheno 2006 Symposium University of Wisconsin, Madison. May 15-17 2006.

5/06 *Measuring Mass and Spin at Colliders*
Argonne Collider Physics Workshop 2006 Argonne National Laboratory, May 10, 2006.

1/06 *Light Dark Matter*
University of Washington Theory Seminar January 10, 2006.

1/06 *Light Dark Matter*
University of Oregon Theory Seminar January 9, 2006.

9/05 *Light Dark Matter*
University of Florida, September 29, 2005.

7/05 *Light Dark Matter and Invisible Quarkonium Decays*
Fermilab TeV Particle Astrophysics Fermilab, July 13-15, 2005.

7/05 *Discovering Light Dark Matter at B-Factories*
SLAC Theory Seminar, July 8, 2005.

5/05 *Light Dark Matter: Theory and Detection*
Argonne National Laboratory Theory Institute 2005: Supersymmetry, Extra Dimensions, and Higgs Bosons, May 9-13, 2005.

5/05 *Light Supersymmetric Dark Matter: Theory and Detection*
PHENO 2005 Symposium, University of Wisconsin, Madison. May 2-4 2005.

8/04 *Signatures of Extended SUSY Models*
PASCOS 2004 and Nath Fest Northeastern University, Aug 16-22 (2004).

7/04 *The Higgs Sector in a String-inspired extension of the MSSM*
Michigan String Phenomenology Conference University of Michigan, Ann Arbor. July 31-Aug 7 (2004).

6/04 *Signatures of Extended SUSY Models*
Invited talk at the Victoria Linear Collider Workshop Victoria, B.C. July 28-31 (2004).

4/04 *Constraining Lorentz violation with high-energy neutrinos*
PHENO 2004 Symposium University of Wisconsin, Madison, WI USA

6/03 *An NMSSM without domain walls*
SUSY 2003: SUSY in the Desert: 11th Annual International Conference on Supersymmetry and the Unification of Fundamental Interactions, Tucson, Arizona, 5-10 Jun 2003. arXiv:`hep-ph/0402064`

5/03 *Phenomenology of the Little Higgs*
PHENO 2003 Symposium University of Wisconsin, Madison, WI USA

11/02 *Electroweak Symmetry Breaking in the MSSM*
Guest Lecturer for Collider Physics 835
University of Wisconsin, Madison, WI, USA

8/02 *Radion effects on unitarity in gauge-boson scattering*
LBL Theory Seminar
Lawrence Berkeley Lab, Berkeley, CA, USA

7/02 *Collider Black Hole Production and Evaporation*
TASI 2002 Student Lecture
University of Colorado, Boulder, CO, USA

4/02 *Determining if the SM or MSSM Higgs bosons couple to muons*
Pheno 2002 Symposium
University of Wisconsin, Madison, WI, USA

5/01 *Radion Effects on Unitarity in Gauge-Boson Scattering*
Pheno 2001 Symposium
University of Wisconsin, Madison, WI, USA

11/01 *The Light Sbottom Scenario*
Student Collider Physics Lecture
University of Wisconsin, Madison, WI, USA