CURRICULUM VITÆ

- **Personal Data**

Name: **Thomas P. McCauley**

Current Place of Work: Institute for Nuclear and Particle Astrophysics
Lawrence Berkeley National Laboratory
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- **Education**

Ph.D. Physics
Institution: Northeastern University, Boston, MA USA
Graduation Date: September 2004
Thesis: "On the origin and nature of ultrahigh energy cosmic rays"
Supervisor: Prof. John D. Swain and Prof. Stephen Reucroft

M.S. Physics
Institution: State University of New York at Binghamton, Binghamton, NY USA
Graduation Date: May 1997
Thesis: "Tests for CP violation and $non-(V-A)$ couplings in top quark decay"
Supervisor: Prof. Charles A. Nelson

B.S. Physics
Institution: Siena College, Loudonville, NY USA
Graduation Date: May 1994

- **Experience**

- Visting Postdoctoral Fellowship.
Institute for Nuclear and Particle Astrophysics, Lawrence Berkeley National Laboratory
Period: October 2004 - present

- Research Assistantship.
Department of Physics, Northeastern University
Period: June 1999 - present

- Teaching Assistantship.
Department of Physics, Northeastern University
Period: September 1997 - May 1999.

- Teaching Assistantship.
Department of Physics and Astronomy, SUNY Binghamton
Period: September 1995 - May 1997.

- **Congresses and seminars**

- 9th Workshop on High Energy Physics Phemomenology.
Invited talk: "UHE neutrinos: present and future".
Bhubaneswar, India. January 3-14, 2006.

- Institute for Nuclear and Particle Astrophysics Journal Club Seminar.
"Ultra high energy cosmic rays and the Pierre Auger Observatory".
Lawrence Berkeley National Laboratory. June 10, 2004.

- 28th International Cosmic Ray Conference.
Poster presented: "An estimate of the primary mass of cosmic rays at 10^{18} eV as inferred from Volcano Ranch data."
Tsukuba, Japan. July 31 - August 7, 2003.

- 12th International Symposium on Very High Energy Cosmic Ray Interactions.
Talk presented: "A new look at Volcano Ranch data."
CERN, Geneva, Switzerland. July 15-20, 2002.

- 13th Symposium on Research Experience for Undergraduates
University of Rochester, Rochester, NY USA. April 1994.

- **Summer schools**

  - Sixth School on Non-Accelerator Astroparticle Physics
  The Abdus Salam International Centre for Theoretical Physics
  Miramare, Trieste, Italy, July 9-20, 2001.

  - Summer School on Astroparticle Physics and Cosmology
  The Abdus Salam International Centre for Theoretical Physics
  Miramare, Trieste, Italy, July 12-30, 2000.

- **Scientific publications**

i)**Refereed publications**

1. *Properties and performance of the prototype instrument for the Pierre Auger Observatory*
J. Abraham *et al.* [Pierre Auger Collaboration]
Nucl. Instrum. Meth. A **523**, 50 (2004).
2. *High Energy Physics in the Atmosphere: Phenomenology of Cosmic Ray Air Showers.*
Luis Anchordoqui, Maria Teresa Dova, Analisa Mariazzi, Thomas McCauley, Thomas Paul, Stephen Reucroft, John Swain
Annals Phys. **314**, 145 (2004) [arXiv:hep-ph/0407020].
3. *The mass composition of cosmic rays near 10^{18} eV as deduced from measurements made at Volcano Ranch*
M.T. Dova, M.E. Manceñido, A.G. Mariazzi, T.P. McCauley, A.A. Watson
Astropart.Phys. **21** 597 (2004) [arXiv:astro-ph/0312463].
4. *Full sky search for ultra high energy cosmic ray anisotropies*
L.A. Anchordoqui, C. Hojvat, T.P. McCauley, T.C. Paul, S. Reucroft, J.D. Swain, A. Widom
Phys. Rev. D **68**, 083004 (2003) [arXiv:astro-ph/0305158].
5. *Neutrinos from accreting neutron stars*
L.A. Anchordoqui, D.F. Torres, T.P. McCauley, G.E. Romero, F.A. Aharonian
Astrophys. J. **589**, 481 (2003) [arXiv:hep-ph/0211231].
6. *Hadronic interactions, precocious unification, and cosmic ray showers at Auger energies*
L. Anchordoqui, H. Goldberg, J. MacLeod, T. McCauley, T. Paul, S. Reucroft, and J. Swain
Mod. Phys. Lett. A **16**, 809 (2001) [arXiv:hep-ph/0104114].
7. *Extensive air showers with TeV-scale quantum gravity*
L. Anchordoqui, H. Goldberg, T. McCauley, T. Paul, S. Reucroft, J. Swain
Phys. Rev. D **63**, 124009 (2001) [arXiv:hep-ph/0011097].

8. *Echoes of the fifth dimension?*
L. A. Anchordoqui, T. P. McCauley, S. Reucroft, J. Swain
Phys. Rev. D **63**, 027303 (2001) `[arXiv:hep-ph/0009319]`.
9. *On the nature of cosmic rays above the Greisen-Zatsepin-Kuz'min cut off*
L. A. Anchordoqui, M. Kirasirova, T. P. McCauley, S. Reucroft, J. D. Swain
Phys. Lett. B. **492**, 237 (2000) `[arXiv:astro-ph/0007403]`.
10. *Possible explanation for the tail of the cosmic ray spectrum*
L.A. Anchordoqui, M.T. Dova, T.P. McCauley, S. Reucroft, J.D. Swain
Phys. Lett. B **482**, 343 (2000) `[arXiv:astro-ph/9912081]`.
11. *Studies of avalanche photodiode performance in a high magnetic field*
J. Marler, T. McCauley, S. Reucroft, J. Swain, D. Budil, S. Kolaczkowski.
Nucl. Instr.and Meth. A **449**, 311 (2000) `[arXiv:hep-ex/0001011]`.
12. *Importance of tests for the complete Lorentz structure of the* $t \to W + b$ *vertex at hadron colliders*
C.A. Nelson, B.T. Kress, M. Lopes, T.P. McCauley.
Phys.Rev. D **57**, 5923 (1998) `[arXiv:hep-ph/9706469]`.
13. *General tests for* $t \to W + b$ *couplings at hadron colliders*
C.A. Nelson, B.T. Kress, M. Lopes, T.P. McCauley.
Phys.Rev. D **56**, 5928 (1997) `[arXiv:hep-ph/9707211]`.

ii) **Conference proceedings**

1. *Multi-messenger studies with AMANDA/IceCube: Observations and strategies*
A. Achterberg *et al.* [IceCube Collaboration]
Proceedings of the 7th Workshop on Towards a Network of Atmospheric Cherenkov Detectors 2005, Palaiseau, France, (2005). `[arXiv:astro-ph/0509396]`
2. *The IceCube collaboration: Contributions to the 29th international cosmic ray conference (ICRC 2005), Pune, India, Aug. 2005*
A. Achterberg *et al.* [IceCube Collaboration]
Proceedings of the 29th International Cosmic Ray Conference, Pune (2005). `[arXiv:astro-ph/0509330]`
3. *From AMANDA to IceCube*
M. Ribordy *et al.* [IceCube Collaboration]
Proceedings of the 5th International Conference on Non-accelerator New Physics (NANP 05), Dubna, Russia, (2005). `[arXiv:astro-ph/0509322]`
4. *An estimate of the primary mass of cosmic rays at* 10^{18} *eV as inferred from Volcano Ranch data*
M.T. Dova, M.E. Manceñido, A.G. Mariazzi, T.P. McCauley, A.A. Watson
Proceedings of the 28th International Cosmic Ray Conference, Tsukuba (2003) `[arXiv:astro-ph/0305351]`.
5. *Simulation of Pierre Auger surface detector response to muons*
A.K. Tripathi, K. Arisaka, D. Barnhill, A. Etchegoyen, A. Filevich, J. Gonzalez, T. McCauley, M.C. Medina, D. Melo, T. Ohnuki, T. Paul, W. Slater, D. Supanitsky, A. Tamashiro
Proceedings of the 28th International Cosmic Ray Conference, Tsukuba (2003).
6. *Numerical likelihood analysis of cosmic ray anisotropies*
C. Hojvat, T.P. McCauley, J.D. Swain, S. Reucroft
Proceedings of the 28th International Cosmic Ray Conference, Tsukuba (2003) `[arXiv:astro-ph/0305206]`.

7. *Full sky search for ultra high energy cosmic ray anisotropies*
L.A. Anchordoqui, C. Hojvat, T.P. McCauley, T.C. Paul, S. Reucroft, J.D. Swain, A. Widom
Proceedings of the 28th International Cosmic Ray Conference, Tsukuba (2003) `[arXiv:astro-ph/0305158]`.
8. *A reinterpretation of Volcano Ranch lateral distribution measurements to infer the mass composition of cosmic rays*
M.T. Dova, M.E. Manceñido, A.G. Mariazzi, T.P. McCauley, A.A. Watson
Proceedings of the International Symposium on Very High Energy Cosmic Ray Interactions, CERN (2002)
Nucl. Phys. B (Proc. Suppl.) **122**, 235 (2003) `[arXiv:astro-ph/0305351]`.
9. *Hadronic interactions, precocious unification, and air showers at Auger energies*
L. Anchordoqui, H. Goldberg, J. MacLeod, T. McCauley, T. Paul, S. Reucroft, J. Swain
Proceedings of the 27th International Cosmic Ray Conference, Hamburg (2001) `[arXiv:hep-ph/0104114]`.
10. *Using* TOP-C *for commodity parallel computing in cosmic ray physics*
G. Alverson, L.A. Anchordoqui, G. Cooperman, V. Grinberg, T.P. McCauley, T. Paul, S. Reucroft, J.D. Swain
Proceedings of the 11th International Conference on Very High Energy Cosmic Ray Interactions, Campinas (2000)
Nucl. Phys. B (Proc. Suppl.) **97**, 193 (2001). `[arXiv:astro-ph/0006154]`.
11. *Simulation of water cerenkov detectors using* GEANT4
L.A. Anchordoqui, T.P. McCauley, T. Paul, S. Reucroft, J.D. Swain, L. Taylor
Proceedings of the 11th International Conference on Very High Energy Cosmic Ray Interactions, Campinas (2000)
Nucl. Phys. B (Proc. Suppl.) **97**, 196 (2001). `[arXiv:astro-ph/0006142]`.
12. *A pot of gold at the end of the cosmic "raynbow"?*
L.A. Anchordoqui, M.T. Dova, T.P. McCauley, T. Paul, S. Reucroft, J.D. Swain
Proceedings of the 11th International Conference on Very High Energy Cosmic Ray Interactions, Campinas (2000)
Nucl. Phys. B (Proc. Suppl.) **97**, 203 (2001). `[arXiv:astro-ph/0006071]`.
13. *Exotic and not–so–exotic candidates for ultra high energy cosmic rays*
J. Swain, L. Anchordoqui, M.T. Dova, T. McCauley, T. Paul, S. Reucroft
AIP Conf. Proc. **566**, 295 (2000).
14. *Scalable Parallel Implementation of Geant4 Using Commodity Hardware and Task Oriented Parallel C*
G. Cooperman, L. Anchordoqui, V. Grinberg, T. McCauley, S. Reucroft, J. Swain
Proceedings of the International Conference on Computing in High Energy and Nuclear Physics, CHEP2000, Padova, Italy, February 7-11, 2000. `[arXiv:hep-ph/0001144]`.

iii) Scientific works published as internal memos of Auger Collaboration

1. *A Systematic Comparison of Three Tank Simulators (G4/SDSim/FastSim) in the DPA Framework.*
Tohru Ohnuki, Gonzalo Rodriguez-Fernandez, David Barnhill, Arun Tripathi, Tom McCauley, Tom Paul, Katsushi Arisaka. GAP-2004-043.
2. *Proposed Design for Auger DPA Software.*
S. Argiro, A. DeCapoa, P. Cattaneo, S. Dagoret-Campagne, H.J. Mathes, T. McCauley, T. Paul, L. Nellen, L. Prado. GAP-2002-021.
3. GEANT4 *simulation of the surface detectors.* T. McCauley and T. Paul. GAP-2000-055.