Curriculum Vitae

Paul Nelson Watts

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Education:

- B.S. Physics, Massachusetts Institute of Technology, June 1987
- B.S. Mathematics, Massachusetts Institute of Technology, June 1987
- M.S. Physics, University of California, Berkeley, May 1989
- Ph.D. Physics, University of California, Berkeley, December 1994

B.S. Physics Thesis:

- Title: "Galaxy Formation with Cosmic Strings and Massive Neutrinos"
- Advisor: Prof. Edmund Bertschinger, Dept. of Physics

Ph.D. Physics Thesis:

- Title: "Differential Geometry on Hopf Algebras and Quantum Groups"
- Committee: Prof. Bruno Zumino, Dept. of Physics (Committee Chair)
  Prof. Korkut Bardakçi, Dept. of Physics
  Prof. Nicolai Yu. Reshetikhin, Dept. of Mathematics

Societies, Awards, and Fellowships:

- Sigma Pi Sigma, MIT, spring semester 1986
- Phi Beta Kappa, MIT, spring semester 1987
- UC Regents Fellowship, fall semester 1987, spring semester 1988
- Faculty Assistant Teaching Award, Department of Physics, UC Berkeley, spring semester 1989
- American Association of Physics Teachers, spring semester 1989
- Department of Education Graduate Research Fellowship, spring semester 1994

Teaching Experience:

- Graduate Student Instructor, Department of Physics, UC Berkeley, fall semesters 1987–1990, 1994; spring semesters 1987–1991; summer semesters 1990, 1991
- Pro-Rata Part-Time Assistant Lecturer in Mathematics, Department of Mathematics, Dublin Institute of Technology, spring semester 2002–present

Research Experience:

- Graduate Student Research Assistant, Theoretical Physics Group, Lawrence Berkeley Laboratory, Berkeley, California, USA, 1 June 1991–31 December 1994
- Chercheur Associé, Centre de Physique Théorique, Centre National de la Recherche Scientifique, Marseille, France, 1 January–30 September 1995
- Postdoctoral Associate, Department of Physics, University of Miami, Coral Gables, Florida, USA, 15 October 1995–15 August 1997
- Postdoctoral Scholar, Dublin Institute for Advanced Studies, School of Theoretical Physics, Dublin, Ireland, 1 September 1997–31 December 2001
- Research Associate, Dublin Institute for Advanced Studies, School of Theoretical Physics, Dublin, Ireland, 1 January 2002–present

Schools and Workshops Attended:

- *Low Dimensional Applications of Quantum Field Theory*, Institut d'Études Scientifiques de Cargèse, Cargèse, France, 11–29 July 1995

Papers:

Publications:

1. Edmund Bertschinger and Paul N. Watts, "Galaxy Formation with Cosmic Strings and Massive Neutrinos", *Astrophys. Jour.* **328** (1988) 23
2. Peter Schupp, Paul Watts and Bruno Zumino, "The 2-Dimensional Quantum Euclidean Algebra", *Lett. Math. Phys.* **24** (1992) 141, `hep-th/9206024`
3. Peter Schupp, Paul Watts and Bruno Zumino, "Differential Geometry on Linear Quantum Groups", *Lett. Math. Phys.* **25** (1992) 139, `hep-th/9206029`
4. Peter Schupp, Paul Watts and Bruno Zumino, "Bicovariant Quantum Algebras and Quantum Lie Algebras", *Commun. Math. Phys.* **157** (1993) 305, `hep-th/9210150`
5. Paul Watts, "Toward a q-Deformed Standard Model", *J. Geom. Phys.* **24** (1997) 61, `hep-th/9603143`
6. Paul Watts, "Ward Identities and Anomalies in Pure $\mathcal{W}_4$ Gravity", *Nucl. Phys.* **B545** (1999) 677, `hep-th/9809078`
7. Paul Watts, "Noncommutative String Theory, the R-Matrix, and Hopf Algebras", *Phys. Lett.* **B474** (2000) 295, `hep-th/9911026`

Conference Proceedings:

1. Peter Schupp, Paul Watts and Bruno Zumino, "Cartan Calculus on Quantum Lie Algebras", *Adv. Appl. Clifford Alg. (Proc. Supp.)* **4 (S1)** (1994) 125, `hep-th/9312073`
2. Paul Watts, "Generalized Wess-Zumino Consistency Conditions for Pure $\mathcal{W}_3$ Gravity Anomalies", in: *Compte-Rendus, W-Algebras: Extended Conformal Symmetries*, R. Grimm, V. Ovsienko, eds. **CPT-95/P.3268** (1995) 68, `hep-th/9509044`

Preprints:

1. Chryssomalis Chryssomalakos, Peter Schupp and Paul Watts, "The Role of the Canonical Element in the Algebra of Differential Operators $\mathcal{A} \rtimes \mathcal{U}$", LBL-33274, UCB-PTH-92/42, `hep-th/9310100`
2. Peter Schupp, Paul Watts and Bruno Zumino, "Cartan Calculus for Hopf Algebras and Quantum Groups", NSF-ITP-93-75, LBL-34215, UCB-PTH-93/20, `hep-th/9306022`
3. Peter Schupp and Paul Watts, "Universal and General Cartan Calculus on Hopf Algebras", LBL-33655, UCB-PTH-93/36, `hep-th/9402134`
4. Paul Watts, "Differential Geometry on Hopf Algebras and Quantum Groups" (Ph.D. thesis), LBL-36537, UCB-PTH-94/35, `hep-th/9412153`
5. Paul Watts, "Killing Form on Quasitriangular Hopf Algebras and Quantum Lie Algebras", CPT-95/P.3201, `q-alg/9505027`
6. Paul Watts, "Derivatives and the Role of the Drinfel'd Twist in Noncommutative String Theory", DIAS-STP-00-03, `hep-th/0003234`

In Preparation:

1. Paul Watts, "A Minimal Supersymmetric Extension to the $\mathcal{W}_3$-Algebra" (working title)