Daniel Whalen

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EDUCATION

Stanford University September 2016
Ph.D. in Physics Dissertation: *Moonshine and $\mathcal{SW}(3/2, 2)$*

Massachusetts Institute of Technology June 2010
B.S. in Mathematics and B.S. in Brain and Cognitive Sciences GPA: 4.9/5.0
Minors in Physics and Psychology

SELECTED PAPERS

Whalen, D., Holophrasm: a Neural Automated Theorem Prover for Higher-Order Logic, *arXiv:1608.02644 [cs.AI]*, (2016).

Whalen, D., An Algorithm for Evaluating Gram matrices in Verma Modules of $\mathcal{W}$-algebras, *arXiv:1412.0759 [hep-th]*, (2014).

(all papers listed on page 2)

WORK EXPERIENCE

Research Assistant, Department of Physics, University of Amsterdam 2015–2016
Developed computational techniques for the evaluation of twisted-twined genera of symmetries of conformal field theories in generalized Umbral Moonshine.

Research Scientist, Renaissance Technologies 2017–present

SELECTED PROJECTS

Holophrasm `github.com/dwhalen/holophrasm`
A neural system for Automated Theorem Proving in Metamath written in Python.

linearKittens `github.com/dwhalen/linearKittens`
A Javascript AI for bloodrizer's Kittens Game using simulation and linear programming to plan with minimal specialized knowledge.

Sentinels Randomizer `github.com/dwhalen/sotmbayes`
An iOS app in Objective-C to crowd-source statistical data about the board game, Sentinels of the Multiverse. Data is reincorporated into the application in order to predict game difficulties. The app has 3300 users and has gathered 10,000 records.

LANGUAGES

Fluent in Python, C++, Mathematica, GAP, and MATLAB.
Experience with Perl, Javascript, Magma, C#, and Objective C.

AWARDS

Bronze Medalist, International Physics Olympiad, Salamanca, Spain 2005

NSF Graduate Research Fellowship Program, Honorable Mention 2010–2011

VOLUNTEER EXPERIENCE

Co-President, Stanford Educational Studies Program 2011–2012
Managed a community service group with an $150,000/year revenue and a team of 20 volunteers to organize two 2000 attendee events. Expanded the program by 50%. Found additional funding to expand outreach programs and financial aid by 100%.

Co-Founder and Treasurer, Luminary Roleplay Society 2016–present
Managed incorporation and 501(c)(3) application for a public charity that promotes and organizes live action roleplaying games for educational purposes.

Member, Institutional Review Board 2009–2010 (MIT), 2012-2015 (Stanford)
Served on ethics committees that oversee scientific research on human subjects.

PAPERS   (author names listed in alphabetical order)

Whalen, D., Holophrasm: a Neural Automated Theorem Prover for Higher-Order Logic, *arXiv:1608.02644 [cs.AI]*, (2016).

Whalen, D., An Algorithm for Evaluating Gram matrices in Verma Modules of $\mathcal{W}$-algebras, *arXiv:1412.0759 [hep-th]*, (2014).

Cheng, M., de Lange, P., Whalen, D., Generalised Umbral Moonshine, *arXiv:1608.07835 [math.RT]*, (2016).

Cheng, M., Harrison, S., Kachru, S., Whalen D., Exceptional Algebra and Sporadic Groups at $c = 12$, *arXiv:1503.07219 [hep-th]*, (2015).

Whalen, D., Vector-valued Rademacher Sums and Automorphic Integrals, *arXiv:1406.0571 [math.NT]*, (2014).

Whalen, D., A Topology-Preserving Voxelization Shrinking Algorithm, *Proceedings of Bridges*, (2012).

Beigi, S., Shor, P., Whalen, D., The Quantum Double Model with Boundary: Condensations and Symmetries, *Communications in Mathematical Physics*, Volume 306, Number 3, 663-694, (2011).

Beigi, S., Shor, P., Whalen, D., Indistinguishable Chargeon-Fluxion Pairs in the Quantum Double of Finite Groups, *arXiv:1002.4903 [math.QA]*, (2010).

Benjamin, N., Harrison, S., Kachru, S., Paquette, N., Whalen, D., On the Elliptic Genera of Manifolds of Spin(7) Holonomy, *Annales Henri Poincaré*, (2014).