

N. Furey - CV

Citizenship Canadian **Languages** English, basic French, basic Spanish

Education PhD in theoretical physics, Perimeter Institute, U. of Waterloo, Dec 2015
Part III Mathematics, Cambridge University, UK (Master's) 2006
Honours B.Sc. in Mathematics and Physics, Simon Fraser University, 2005

Research Fellowships accepted

2020 Freigeist Fellowship, VolkswagenStiftung for Humboldt-Universität Berlin
2019 AIMS African Institute of Mathematical Sciences Fellowship, Cape Town
2015 Walter Grant Scott Fellowship in Physics, Trinity Hall, Cambridge University
2015 Canadian NSERC postdoctoral fellowship, held at Cambridge University

Research Experience

2016-19	Research Fellow	Cambridge	Algebraic particle physics
2015	PhD Student	Perimeter Institute	Algebraic particle physics
2006	Research Project	Cambridge	Machian causal sets
2004	Honours Thesis	Simon Fraser U.	Modified gravity

(Medical issues caused numerous interruptions, beginning 2004. Doctor's letter available.)

Publications

- C. Furey, *Three generations, two unbroken gauge symmetries, and one eight-dimensional algebra*, Phys. Lett. B, **785** (2018) p.84-89
See addendum, arXiv version
- C. Furey, *$SU(3)_C \times SU(2)_L \times U(1)_Y (\times U(1)_X)$ as a symmetry of division algebraic ladder operators*, Eur. Phys. J. C, **78** 5 (2018) 375
- C. Furey, *A demonstration that electroweak theory could violate parity automatically (leptonic case)*, Int.J.Mod.Phys.A, (2018)
- C. Furey, *Standard model physics from an algebra?*,
PhD thesis, University of Waterloo, [arXiv:1611.09182]
- C. Furey, *Charge quantization from a number operator*,
Phys. Lett. B, **742** (2015), pp. 195–199
- C. Furey, *Generations: Three prints, in colour*,
JHEP **10** (2014) 046 [arXiv:1405.4601 hep-th]
- C. Furey, *Towards a unified theory of ideals*,
Phys. Rev. D **86** (2012) 025024, [arXiv:1002.1497 hep-th]
- Furey, DeBenedictis, *Wormhole throats in R^m gravity*,
Class. Quantum Grav. **22** (2005) 313–322, [arXiv:gr-qc/0410088]

Colloquia

2019	Colloquium	Dept Physics, University of British Columbia	Vancouver, Canada
2019	Colloquium	Dept Physics, Simon Fraser University	Vancouver, Canada
2018	Colloquium	Department of Mathematics, Rutgers	New Brunswick, US
2017	Colloquium	School of Mathematics, Trinity College	Dublin, Ireland

Conference talks

2021	Talk	Women at the intersection of math/physics, Perimeter	Waterloo, Canada
2019	Talk	Iris Adlershof Symposium, Humboldt University	Berlin, Germany
2018	Plenary Talk	14th Annual VCES conference	Vienna, Austria
2018	Talk	15th Marcel Grossmann meeting	Rome, Italy
2017	Talk	Bangkok Workshop on Discrete Geometry	Bangkok, Thailand
2017	Talk	6th Bangkok Workshop on High Energy Theory	Bangkok, Thailand
2016	Talk	2016 Advances in Quantum Gravity conference	Hawaii, USA

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2016	Talk	Algebraic Geometry and Math-Physics Conference	Tromso, Norway
2016	Talk	54th International School of Subnuclear Physics (won the Giulio Racah Diploma)	Erice, Italy
2015	Talk	2015 Advances in Quantum Gravity conference	Los Angeles, USA
2014	Talk	10th International Conference on Clifford Algebras and their Applications in Mathematical Physics (won best talk award)	Tartu, Estonia
2014	Talk	Frontiers of Fundamental Physics Conference	Marseille, France
2014	Talk	52nd International School of Subnuclear Physics (won the Eugene P. Wigner Diploma)	Erice, Italy
2014	Talk	Theory Canada 9 Conference	Waterloo, Canada
2007	Talk	Current challenges for causal set quantum gravity	Waterloo, Canada
2007	Talk	Graduate Student Conference, Perimeter Inst.	Waterloo, Canada
2003	Talk	40th Western Regional Nuclear and Particle Physics Conference, this trip was the prize for winning the TRIUMF competition, below.	Lk Louise, Canada
2002	Talk	TRIUMF Annual Research Student Competition (won the competition)	Vancouver, Canada

Selected seminars

2020	Talk	Humboldt University, Depts of Physics and Maths	Berlin, Germany
2020	Talk	Nikhef National Institute for Subatomic Physics	Amsterdam, NL
2020	Talk	Rutgers University, Department of mathematics	New Brunswick, US
2019	Talk	Humboldt University, Depts of Physics and Maths	Berlin, Germany
2019	Talk	University of Göttingen, Physics department	Göttingen, Germany
2019	Talk	Ludwig Maximilian University, Physics department	Munich, Germany
2018	Talk	Perimeter Institute for Theoretical Physics	Waterloo, Canada
2018	Talk	Prof. S. Majid's group, Queen Mary University	London, UK
2017	Talk	Prof B. Coecke's group, Oxford University	Oxford, UK
2017	Talk	Quantum fields and strings group, DAMTP	Cambridge, UK
2017	Talk	Prof. M. Sakamoto's group, Kobe University	Kobe, Japan
2017	Talk	Prof. N. Maekawa's group, Nagoya University	Nagoya, Japan
2017	Talk	Prof. K. Yoshida's group, Kyoto University	Kyoto, Japan
2017	Talk	Center for Theoretical Physics of the Universe, IBS	Daejeon, S. Korea
2017	Talk	Prof. H.L. Yu's group, Academia Sinica	Taipei, Taiwan
2017	Talk	National Tsing Hua University	Hsinchu, Taiwan
2017	Talk	Prof M.C. Tan's group, National U. of Singapore	Singapore
2016	Talk	Prof. A. Lasenby's group, Cavendish Laboratory	Cambridge, UK
2016	Talk	Particle theory group, University of Nottingham	Nottingham, UK
2016	Talk	Mathematical physics group, DAMTP	Cambridge, UK
2016	Talk	Particle Theory group, University of Sussex	Brighton, UK
2015	Talk	For John Barrett's group, University of Nottingham	Nottingham, UK
2014	Talk	For Pierre Ramond's group, University of Florida	Florida, USA
2014	Talk	For Jorge Pullin's group, Louisiana State University	Louisiana, USA
2014	Talk	Centre de Physique Theorique	Marseille, France
2014	Talk	Quantum gravity research group, Perimeter Inst.	Waterloo, Canada
2014	Talk	Dept Mathematics, University of Waterloo (x2)	Waterloo, Canada
2014	Talk	Dept Physics, University of Waterloo (x2)	Waterloo, Canada
2013	Talk	For department of theoretical physics INFN	Naples, Italy

Quanta article: [The Peculiar Math that could Underlie the Laws of Nature](#), by N. Wolchover
Second most-read article in Quanta Magazine for that year

Wired article: [10 Women in Science and Tech who should be Household Names](#), by E. Dreyfuss

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Video series: [Division algebras and the standard model](#)

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Students	2020	Mentor for several AIMS graduate students, South Africa (ongoing)
	2019	Panel Speaker, AIMS Women in Science , Cape Town, South Africa
	2019	Lecture for AIMS students, Cape Town, South Africa
	2019	Supervised research project for Part III grad student, Cambridge
	2019	Talk for Women in Maths, Murray Edwards College, Cambridge
	2019	Lecture for TRIUMF physics students, UBC, Vancouver, Canada
	2018	Informally mentoring a small number of graduate students
	2017	Panel Speaker Trinity Hall Women in Science, Cambridge
	2017	Trinity Hall Outreach: for students in less advantaged districts
	2016	Interviewed students for entrance into the Math Tripos, Cambridge
	2016	Talk Natural Sciences Society, Trinity Hall, Cambridge
Outreach	2016	Talk Natural sciences first-years Trinity Hall, Cambridge
	2019	Film Consulting for educational video on division algebras, Seeker
	2019	Podcast Quanta Magazine, Octonions and particle physics
	2018	Art Minor consulting, maths-inspired sculpture B. Petersson
Leadership / Community	2017	Talk British Science Association, SciBar public talk, Cambridge
		Referee for <i>Nuclear Physics B</i>
		Referee for <i>Physics Letters B</i>
		Referee for <i>European Physical Journal C</i>
		Referee for <i>Int. J. Mod. Phys. A</i>
		Referee for <i>Advances in Applied Clifford Algebras</i> , Springer
		Referee for <i>Commentationes Mathematicae Universitatis Carolinae</i> , Prague
	2018	(Offered) Guest Editor in Chief, <i>Adv. in Applied Clifford Algebras</i>
	2016-9	Member of governing body, Trinity Hall Cambridge
		Member of Perimeter Institute's Environmental Committee
Funding	2020-2026	VW Freigeist Fellowship, Humboldt University, Berlin
	2019-2023	Royal Commission 1851 Fellowship (offered), U. Edinburgh
	2019-2022	Rutgers University postdoctoral fellowship (offered)
	2019-2020	AIMS African Institute of Mathematical Sciences Fellowship, Cape Town
	2016-2019	Walter Grant Scott Fellowship in Physics, Cambridge
	2016-2018	NSERC Postdoctoral Fellowship, Cambridge
	2016-2018	Newton International Fellowship (offered) Imperial College
	2015	PhD Completion award, Dept Physics, U. of Waterloo
	2014-2015	NSERC grant (through supervisor)
	2012-2014	John Templeton Foundation (through supervisor)
	2006-2010	NSERC Alexander Graham Bell PGS-D and CGS-D awards
	2006-2010	President's Graduate Scholarships, U. of Waterloo
	2009	NSERC Michael Smith Foreign Study Supplement, M.I.T.
	2005	Rudi Haering Award in Physics, Simon Fraser University