

# ADAM BENE WATTS

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## EDUCATION

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- PhD Physics** September 2016 - Present  
*Massachusetts Institute of Technology*, Cambridge, USA.
- BSc. Math & Physics, Minor Computer Science** September 2011 - May 2015  
*McGill University*, Montréal, Canada.
- International Baccalaureate** September 2009 - June 2011  
*Lester B. Pearson College of the Pacific*, Metchosin, Canada.

## PUBLICATIONS

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- Watts, A. B., and Helton, J.W. (2020). 3XOR Games with Perfect Commuting Operator Strategies Have Perfect Tensor Product Strategies and are Decidable in Polynomial Time. *Preprint at arXiv:2010.16290*
- Watts, A. B., Halpern, N. Y., and Harrow, A.W. (2019). Nonlinear Bell inequality for macroscopic measurements. *Submitted to PRL. Preprint at arXiv:1911.09122*
- Watts, A. B., Kothari, R., Schaeffer, L., and Tal, A. (2019). Exponential separation between shallow quantum circuits and unbounded fan-in shallow classical circuits. *Accepted Talk at QIP 2019, STOC 2019. Preprint at arXiv:1906.08890*
- Watts, A. B., Harrow, A. W., and Natarajan, A. (2018). Algorithms and Bounds for Entangled XOR Games. *Accepted talk at ITCS 2019. Preprint at arXiv:1801.00821*
- Watts, A. B., Norin, S., and Yepremyan, L. (2020). A Turán theorem for extensions via an Erdős-Ko-Rado theorem for Lagrangians. *Combinatorica*, 39(5), 1149-1171. [arXiv:1707.01533](#).
- Cai, X. S., Perarnau, G., Reed, B., and Watts, A. B. (2017). Acyclic edge colourings of graphs with large girth. *Random Structures & Algorithms*, 50(4), 511-533. [arXiv:1411.3047](#).

## TALKS

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*3XOR Games with Perfect Commuting Operator Strategies Have Perfect Tensor Product Strategies and are Decidable in Polynomial Time*

- CWI Seminar, Centrum Wiskunde & Informatica (virtual), June 19, 2020.

*Macroscopic Tests of Quantum Mechanics*

- Cavendish QI Seminar Series, University of Cambridge (virtual), Oct 30, 2020.
- Quantum Information Processing Seminar, MIT, Dec 6, 2019.
- ITAMP Seminar, Harvard, Oct 11, 2019.

*An Algebraic Framework for XOR Games* (A precursor to 2020 3XOR paper)

- Workshop: The Many Faceted Connes Embedding Problem, BIRS, July 16, 2019.

*Exponential separation between shallow quantum circuits and unbounded fan-in shallow classical circuits*

- STOC accepted talk, Phoenix Convention Center, June 25, 2019;
- IQC Colloquium, University of Waterloo, June 17, 2019;
- IQI Seminar, Caltech, March 19, 2019.

*Algorithms and Bounds for XOR Games*

- ITCS accepted talk, UCSD, Jan 10, 2019;
- Workshop on Quantum Information, Harvard CMSA, April 24, 2017.

## TEACHING

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### As an Instructor

- Physics 3 (Classical Mechanics). [MIT Interphase EDGE Summer Program](#). Summer 2020 and 2019.

### As a Teaching Assistant

- 8.01ESG (Classical Mechanics). [MIT Experimental Studies Group](#). Fall 2019.
- MAS Freshman Program (General Physics TA). MIT Media Lab. Fall 2017 - Spring 2019.
- 8.02 (Electricity and Magnetism). MIT. Spring 2018.
- 8.01 (Classical Mechanics). MIT. Fall 2017.

### As a Private Tutor

- ECED 2000 (Electric Circuits). Dalhousie University. Fall 2015

## SELECT AWARDS AND HONOURS

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- NSERC Undergraduate Student Research Award, McGill University (2015)
- Herbert J Brennen Scholarship, McGill University (2014)
- Acceptance to the Undergraduate School on Quantum Information Processing (USEQIP) at the Institute for Quantum Computing, Waterloo (2014)
- Second Place (Category: Math & CS), McGill Faculty of Science Undergraduate Research Symposium (2013)
- J.E. Clark “Best in the West” Scholarship, McGill University (2012)
- E.R. Pounder Prize in Physics, McGill University (2012)
- Acceptance to the International Summer School for Young Physicists (ISSYP) at the Perimeter Institute for Theoretical Physics, Waterloo (2010)
- Acceptance to the International Summer School on Water in the Anthropocene at the Abdul Salam International Center for Theoretical Physics, Trieste (2010)
- Full Scholarship to Lester B. Pearson College of the Pacific (2009)