

# Emil Khabiboulline

17 Oxford St, Jefferson Lab; Cambridge, MA 02138; USA  
ekhabiboulline@g.harvard.edu | ekhabiboulline.me

## EDUCATION

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### Harvard University

August 2016 - December 2022

*Ph.D. Candidate, M.A. in Physics*

*Cambridge, MA*

- *Thesis:* Quantum Communication and Thermalization: From Theory to Practice.
- *Committee:* Mikhail Lukin (chair), Aram Harrow, Daniel Jafferis, Ashvin Vishwanath.
- *Funding:* National Science Foundation Graduate Research Fellow.

### California Institute of Technology

September 2012 - June 2016

*B.S. in Physics*

*Pasadena, CA*

- *Funding:* Stamps Scholar, Dunham Scholar, Fermi Research Alliance Scholar.
- *Honors:* Frank Teruggi Memorial Award, Lucy Guernsey Service Award, SanPietro Travel Prize.

### Illinois Mathematics and Science Academy

August 2009 - June 2012

*High School Diploma*

*Aurora, IL*

- *Honors:* National Merit Finalist, National AP Scholar.

## EMPLOYMENT

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### Amazon Quantum Computing

June - September 2022

*Research Scientist Intern*

*Pasadena, CA*

### Kavli Institute for the Physics and Mathematics of the Universe

June - August 2013

*Visiting Researcher*

*Kashiwa, Japan*

### Fermi National Accelerator Laboratory

June - August 2011, June - July 2012

*Seasonal Employee*

*Batavia, IL*

## PUBLICATIONS

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- E. T. Khabiboulline, J. S. Sandhu, M. U. Gambetta, M. D. Lukin, and J. Borregaard. Efficient Quantum Voting with Information-Theoretic Security, arXiv:2112.14242.
- T. Schuster, B. Kobrin, P. Gao, I. Cong, E. T. Khabiboulline, N. M. Linke, M. D. Lukin, C. Monroe, B. Yoshida, and N. Y. Yao. Many-Body Quantum Teleportation via Operator Spreading in the Traversable Wormhole Protocol. *Phys. Rev. X*, 12:031013, Jul 2022.
- E. T. Khabiboulline, J. Borregaard, K. De Greve, and M. D. Lukin. Quantum-assisted telescope arrays. *Phys. Rev. A*, 100:022316, Aug 2019.
- E. T. Khabiboulline, J. Borregaard, K. De Greve, and M. D. Lukin. Optical Interferometry with Quantum Networks. *Phys. Rev. Lett.*, 123:070504, Aug 2019.
- S. Peng, R. Zhang, V. H. Chen, E. T. Khabiboulline, P. Braun, and H. A. Atwater. Three-Dimensional Single Gyroid Photonic Crystals with a Mid-Infrared Bandgap. *ACS Photonics*, 3(6):1131–1137, 2016.
- E. T. Khabiboulline, C. L. Steinhardt, J. D. Silverman, S. L. Ellison, J. T. Mendel, and D. R. Patton. Changing Ionization Conditions in SDSS Galaxies with Active Galactic Nuclei as a Function of Environment from Pairs to Clusters. *The Astrophysical Journal*, 795(1):62, 2014.

- E. J. DiMarco, E. Khabiboulline, D. F. Orris, M. A. Tartaglia, and I. Terechkine. Superconducting Solenoid Lens for a High Energy Part of a Proton Linac Front End. *IEEE Transactions on Applied Superconductivity*, 23(3):4100905, June 2013.

## PRESENTATIONS

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- *Poster*: Quantum Information Processing 2021.
- *Talk (Invited)*: Dinner Seminar at Cosmic Dawn Center (July 21, 2020).
- *Talk (Invited)*: Provocateur Presentation at Quantum Leap Challenge: Quantum Sensing Ideas Lab (May 18, 2020).
- *Talk (Invited)*: Quantum Computing Seminar (January 13, 2020) at Brookhaven National Laboratory.
- *Talk*: American Physical Society March Meeting 2019 – Focus Session on Distributed Quantum Computation, Networking, and Information Security.
- *Poster*: Quantum Information Processing 2019.
- *Talk (Invited)*: Lunch Seminar (November 8, 2018) at Institute for Theoretical Atomic, Molecular, and Optical Physics (Harvard).
- *Talk*: Workshop on Quantum Information (April 23-24, 2018) at Center of Mathematical Sciences and Applications (Harvard).
- *Talk*: American Physical Society March Meeting 2016.
- *Poster*: International Conference on Quantum, Atomic, Molecular, and Plasma Physics 2015.
- *Poster (Chambliss Astronomy Achievement Student Award)*: 223rd Meeting of the American Astronomical Society.
- *Poster (Special Award from CERN)*: Intel International Science and Engineering Fair 2011.

## SERVICE

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- *Referee*: QIP 2023.
- *Referee*: QCrypt 2022.
- *Reviewer*: IEEE Transactions on Computers.
- *Referee*: Quantum Computing Theory in Practice 2020.

## INSTRUCTION

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- *Teaching Fellow*: Harvard Computer Science 127/227 (Cryptography), Fall 2021.
- *Teaching Fellow*: Harvard Physics 271 (Topics in the Physics of Quantum Information), Fall 2020.

## CODING

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- *Languages*: C++, Python, Julia.