

# Felix Leditzky

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## Employment

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Jan 2021 – present	<b>Assistant Professor</b> Department of Mathematics & Department of Electrical and Computer Engineering (Affiliate), University of Illinois Urbana-Champaign
Dec 2019 – Dec 2020	<b>Postdoctoral Fellow</b> Institute for Quantum Computing, University of Waterloo Perimeter Institute for Theoretical Physics
Nov 2016 – Nov 2019	<b>Postdoctoral Research Associate</b> JILA, University of Colorado Boulder

## Education

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Oct 2013 – Oct 2016	<b>PhD</b> , Department of Pure Mathematics and Mathematical Statistics, University of Cambridge, supervised by Nilanjana Datta Thesis: “ <a href="#">Relative entropies and their use in quantum information theory</a> ”
Oct 2006 – Apr 2013	<b>Diploma</b> ,* Physics, University of Vienna, graduated with distinction ( <a href="#">thesis</a> )
Oct 2006 – Feb 2012	<b>Diploma</b> , Mathematics, University of Vienna, grad. with distinction ( <a href="#">thesis</a> )

\*An Austrian “Diploma” degree in Mathematics or Physics is a 5-year degree equivalent to a combined Bachelor’s and Master’s degree. The awarded academic title is “Magister rerum naturalium” (Mag. rer. nat.).

## Research interests

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Quantum information theory, in particular mathematical and information-theoretic aspects:

- Additivity problems in quantum information theory, quantum channels and their capacities, quantum Shannon theory, relative entropies, strong converse theorems, second order asymptotics
- Multipartite entanglement, symmetries and representation theory, group theory
- Semidefinite programming, convex optimization theory, global optimization techniques

## Publications & preprints

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- [29] X. Chen, S. Chessa, I. George, **F. Leditzky**, and E. Chitambar. “Capacities of Entanglement Distribution From a Central Source”. *arXiv preprint* (2024). arXiv: [2411.04977](https://arxiv.org/abs/2411.04977) [[quant-ph](#)]
- [28] C. Vairogs, S. Hermes, and **F. Leditzky**. “Localizing multipartite entanglement with local and global measurements”. *arXiv preprint* (2024). arXiv: [2411.04080](https://arxiv.org/abs/2411.04080) [[quant-ph](#)]

- [27] N. LaRacunte and **F. Leditzky**. “Approximate Unitary  $k$ -Designs from Shallow, Low-Communication Circuits”. *Accepted at 16th Innovations in Theoretical Computer Science (ITCS)* (2024). arXiv: [2407.07876 \[quant-ph\]](#)
- [26] T. Nuradha, H. K. Mishra, **F. Leditzky**, and M. M. Wilde. “Multivariate Fidelities”. *arXiv preprint* (2024). arXiv: [2404.16101 \[quant-ph\]](#)
- [25] B. Doolittle, **F. Leditzky**, and E. Chitambar. “Operational Nonclassicality in Quantum Communication Networks”. *arXiv preprint* (2024). arXiv: [2403.02988 \[quant-ph\]](#)
- [24] G. A. Hamilton and **F. Leditzky**. “Probing Multipartite Entanglement Through Persistent Homology”. *Communications in Mathematical Physics* 405.5 (May 2024), p. 125. arXiv: [2307.07492 \[quant-ph\]](#)
- [23] E. Chitambar and **F. Leditzky**. “On the Duality of Teleportation and Dense Coding”. *IEEE Transactions on Information Theory* 70.5 (2024), pp. 3529–3537. arXiv: [2302.14798 \[quant-ph\]](#)
- [22] A. Seshadri, **F. Leditzky**, V. Siddhu, and G. Smith. “On the Separation of Correlation-Assisted Sum Capacities of Multiple Access Channels”. *IEEE Transactions on Information Theory* 69.9 (2023), pp. 5805–5844. arXiv: [2205.13538 \[cs.IT\]](#)
- [21] **F. Leditzky**, D. Leung, V. Siddhu, G. Smith, and J. A. Smolin. “Generic Nonadditivity of Quantum Capacity in Simple Channels”. *Physical Review Letters* 130 (20 May 2023), p. 200801. arXiv: [2202.08377 \[quant-ph\]](#)
- [20] **F. Leditzky**, D. Leung, V. Siddhu, G. Smith, and J. A. Smolin. “The Platypus of the Quantum Channel Zoo”. *IEEE Transactions on Information Theory* 69.6 (2023), pp. 3825–3849. arXiv: [2202.08380 \[quant-ph\]](#)
- [19] A. Shlosberg, A. J. Jena, P. Mukhopadhyay, J. F. Haase, **F. Leditzky**, and L. Dellantonio. “Adaptive estimation of quantum observables”. *Quantum* 7 (2023), p. 906. arXiv: [2110.15339 \[quant-ph\]](#)
- [18] C. Hirche and **F. Leditzky**. “Bounding Quantum Capacities via Partial Orders and Complementarity”. *IEEE Transactions on Information Theory* 69.1 (2023), pp. 283–297. arXiv: [2202.11688 \[quant-ph\]](#)
- [17] **F. Leditzky**. “Optimality of the pretty good measurement for port-based teleportation”. *Letters in Mathematical Physics* 112.5 (2022), p. 98. arXiv: [2008.11194 \[quant-ph\]](#)
- [16] R. Arnon-Friedman and **F. Leditzky**. “Upper bounds on device-independent quantum key distribution rates and a revised Peres conjecture”. *IEEE Transactions on Information Theory* 67.10 (2021), pp. 6606–6618. arXiv: [2005.12325 \[quant-ph\]](#)
- [15] J. Bausch and **F. Leditzky**. “Error Thresholds for Arbitrary Pauli Noise”. *SIAM Journal on Computing* 50.4 (2021), pp. 1410–1460. arXiv: [1910.00471 \[quant-ph\]](#)
- [14] E. I. Rosenthal, C. M. F. Schneider, M. Malnou, Z. Zhao, **F. Leditzky**, B. J. Chapman, W. Wustmann, X. Ma, D. A. Palken, M. F. Zanner, L. R. Vale, G. C. Hilton, J. Gao, G. Smith, G. Kirchmair, and K. W. Lehnert. “Efficient and Low-Backaction Quantum Measurement Using a Chip-Scale Detector”. *Physical Review Letters* 126 (9 Mar. 2021), p. 090503. arXiv: [2008.03805 \[quant-ph\]](#)
- [13] M. Christandl, **F. Leditzky**, C. Majenz, G. Smith, F. Speelman, and M. Walter. “Asymptotic Performance of Port-Based Teleportation”. *Communications in Mathematical Physics* 381.1 (Jan. 2021), pp. 379–451. arXiv: [1809.10751 \[quant-ph\]](#)
- [12] **F. Leditzky**, M. A. Alhejji, J. Levin, and G. Smith. “Playing Games with Multiple Access Channels”. *Nature Communications* 11, 1497 (2020). arXiv: [1909.02479 \[quant-ph\]](#)
- [11] J. Bausch and **F. Leditzky**. “Quantum codes from neural networks”. *New Journal of Physics* 22.2, 023005 (Feb. 2020). arXiv: [1806.08781 \[quant-ph\]](#)
- [10] **F. Leditzky**, D. Leung, and G. Smith. “Dephasing Channel and Superadditivity of Coherent Information”. *Physical Review Letters* 121 (16 Oct. 2018), p. 160501. arXiv: [1806.08327 \[quant-ph\]](#)

- [9] **F. Leditzky**, N. Datta, and G. Smith. “Useful states and entanglement distillation”. *IEEE Transactions on Information Theory* 64.7 (July 2018), pp. 4689–4708. arXiv: [1701.03081 \[quant-ph\]](#)
- [8] **F. Leditzky**, D. Leung, and G. Smith. “Quantum and Private Capacities of Low-Noise Channels”. *Physical Review Letters* 120 (16 Apr. 2018), p. 160503. arXiv: [1705.04335 \[quant-ph\]](#)
- [7] **F. Leditzky**, E. Kaur, N. Datta, and M. M. Wilde. “Approaches for approximate additivity of the Holevo information of quantum channels”. *Physical Review A* 97 (1 Jan. 2018), p. 012332. arXiv: [1709.01111 \[quant-ph\]](#)
- [6] **F. Leditzky**, C. Rouzé, and N. Datta. “Data processing for the sandwiched Rényi divergence: a condition for equality”. *Letters in Mathematical Physics* 107.1 (2017), pp. 61–80. arXiv: [1604.02119 \[quant-ph\]](#)
- [5] S. Beigi, N. Datta, and **F. Leditzky**. “Decoding Quantum Information via the Petz recovery map”. *Journal of Mathematical Physics* 57.8, 082203 (2016). arXiv: [1504.04449 \[quant-ph\]](#)
- [4] **F. Leditzky**, M. M. Wilde, and N. Datta. “Strong converse theorems using Rényi entropies”. *Journal of Mathematical Physics* 57.8, 082202 (2016). arXiv: [1506.02635 \[quant-ph\]](#)
- [3] **F. Leditzky** and N. Datta. “Second order asymptotics of visible mixed quantum source coding via universal codes”. *IEEE Transactions on Information Theory* 62.7 (2016), pp. 4347–4355. arXiv: [1407.6616 \[quant-ph\]](#)
- [2] N. Datta and **F. Leditzky**. “Second-Order Asymptotics for Source Coding, Dense Coding, and Pure-State Entanglement Conversions”. *IEEE Transactions on Information Theory* 61.1 (2015), pp. 582–608. arXiv: [1403.2543 \[quant-ph\]](#), N. Datta and **F. Leditzky**. “Corrections to “Second-Order Asymptotics for Source Coding, Dense Coding, and Pure-State Entanglement Conversions””. *IEEE Transactions on Information Theory* 64.4 (2017), pp. 2625–2627
- [1] N. Datta and **F. Leditzky**. “A limit of the quantum Rényi divergence”. *Journal of Physics A: Mathematical and Theoretical* 47.4 (2014), p. 045304. arXiv: [1308.5961 \[quant-ph\]](#)

## Grants

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Oct 2025 – Sep 2030	National Science Foundation No. 2442410 <a href="#">CAREER: Symmetries in noisy multipartite quantum systems</a> Principal Investigator (PI): Felix Leditzky (UIUC) Amount awarded: <b>\$633,770</b>
Dec 2024 – Dec 2027	National Science Foundation No. 2426103 <a href="#">FET: Small: NSF-NSERC: Fundamental limits on quantum communications</a> PI: Felix Leditzky (UIUC) Amount awarded: <b>\$599,848</b>
Jul 2024 – Jul 2025	National Science Foundation No. 2409823 <a href="#">Conference: Beyond IID in Information Theory 12</a> PI: Felix Leditzky (UIUC) Co-PIs: Marius Junge, Eric Chitambar, Roy Araiza, Amanda Young (UIUC) Amount awarded: <b>\$46,000</b>
Apr 2023 – Feb 2025	UIUC Campus Research Board Award No. RB23076 “Quantum capacity thresholds from symmetric codes” PI: Felix Leditzky (UIUC) Amount awarded: <b>\$30,000</b> , Arnold O. Beckman Research Award
Sep 2021 – Aug 2025	National Science Foundation No. 2137953

Aug 2021 – Aug 2025	<p><a href="#">QuIC-TAQS: Quantum Networking with Multipartite Entangled Photons</a>  PI: Shuo Sun (University of Colorado Boulder)  Co-PIs: Edwin Barnes (Virginia Tech), Paul Kwiat, Felix Leditzky (UIUC)  Amount awarded to Co-PI: <b>\$388,377</b> (total award amount: \$2,499,999)  IBM-Illinois Discovery Accelerator Institute Grant  <a href="#">“Efficient implementation of optimal measurements in state discrimination”</a>  PIs: Srinivasan Arunachalam (IBM), Eric Chitambar, Felix Leditzky (UIUC)  Amount awarded to PI: <b>\$408,450</b> (total award amount: \$8,750,000)</p>
Aug 2018	<p>National Science Foundation No. 1834515  <a href="#">Travel Support for Workshop: Rocky Mountain Summit on Quantum Information</a>  PI: Felix Leditzky; Co-PI: Graeme Smith (University of Colorado Boulder)  Amount awarded: <b>\$10,000</b></p>
May 2018	<p><a href="#">AI Grant</a>  “Search for new quantum error correction codes using neural networks”  PIs: Johannes Bausch (University of Cambridge), Felix Leditzky (University of Colorado Boulder)  Amount awarded: <b>\$2,500 plus \$20,000 GPU credits</b></p>

## Awards

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Aug 2023 – Aug 2025	<p>Lincoln Excellence for Assistant Professor (LEAP) Scholar  College of Liberal Arts and Sciences, University of Illinois Urbana-Champaign  Includes discretionary fund of <b>\$10,000</b> for scholarly activities.</p>
Apr 2023 – Feb 2025	<p>Arnold O. Beckman Research Award  University of Illinois Urbana-Champaign</p>
Jan 2023 – Jan 2025	<p>David H. Blackwell Scholar  Department of Mathematics, University of Illinois Urbana-Champaign  Includes discretionary fund of <b>\$12,000</b> for scholarly activities.</p>
Apr 2015	<p>Smith-Knight and Rayleigh-Knight Prize (essay)  University of Cambridge</p>

## Supervision & Mentoring

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### Postdoctoral scholars

Aug 2024 – Aug 2027	Jacob L. Beckey
Aug 2022 – Aug 2024	Stefano Chessa (jointly advised with Eric Chitambar)

### PhD students

Spring 2024 – present	Christopher Vairogs
Spring 2023 – present	Sujeet Bhalerao
Spring 2022 – present	Haneul Kim (jointly advised with Eric Chitambar)
Spring 2022 – present	Stephen Zhou

## Master's students

Aug 2024 – present      Yulie Arad  
Aug 2024 – present      Mayank Bhatia

## Undergraduate students

Aug 2024 – present      Sungjai Lee (undergraduate research)  
Aug 2023 – Aug 2024      Yulie Arad (undergraduate research)  
Jan 2022 – Aug 2024      Mayank Bhatia (undergraduate research, undergraduate thesis supervision)  
Jan 2022 – Dec 2022      Mason Camp (undergraduate research)  
Aug 2021 – Aug 2022      Nouralhoda Bayat (undergraduate research)

## Teaching experience

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### Courses at University of Illinois Urbana-Champaign

Spring 2025      Math 257 Linear Algebra with Computational Applications  
First course in linear algebra for STEM majors, 482 students

Spring 2024      Math 257 Linear Algebra with Computational Applications  
First course in linear algebra for STEM majors, 575 students

Spring 2023      [Math 595 Quantum channels](#)  
Advanced graduate topics course, 18 students  
Listed as a “Teacher ranked as excellent by their students”

Fall 2022      [Math 595 Representation-theoretic methods in quantum information theory](#)  
Advanced graduate topics course, 28 students  
Listed as a “Teacher ranked as excellent by their students” with outstanding ratings

Fall 2021      [Math 416 Abstract Linear Algebra](#)  
Proof-based linear algebra course for math majors, 61 students  
Listed as a “Teacher ranked as excellent by their students”

Spring 2021      [Math 595 Quantum channels I](#) & [Math 595 Quantum channels II](#)  
Advanced graduate topics course, 28 students  
Listed as a “Teacher ranked as excellent by their students” with outstanding ratings

*Note: 1xx-4xx courses are at the undergraduate level, while 5xx courses are at the graduate level.*

### Undergraduate research projects at University of Illinois Urbana-Champaign

2024 – 2025      Measuring entanglement witnesses for (weighted) graph states  
Students: Yulie Arad, Mayank Bhatia  
Postdoc mentor: Jacob Beckey

2023 – 2024      [Optimizing Quantum Teleportation Protocols](#)  
IBM-Illinois Discovery Accelerator Institute REU project  
Students: Yulie Arad, Mayank Bhatia

Fall 2023      [Mapping out the quantum channel zoo](#)  
[Illinois Geometry Lab](#) project

- Students: Ben Booker, Tianshun Gao, Anne Que, Yuxuan Wan, Lumi Xu  
 Graduate student mentor: Sujeet Bhalerao
- 2022 – 2023 [Variational Quantum Optimization of Teleportation Protocols with Noisy Resources](#)  
 IBM-Illinois Discovery Accelerator Institute REU project  
 Students: Hani Al Majed, Mayank Bhatia, Palak Kotwani  
 Graduate student mentor: Brian Doolittle
- Fall 2022 [Quantum teleportation and quantum state discrimination](#)  
 Illinois Geometry Lab project  
 Students: M. Bhatia, M. Camp, D. Chakrabarti, R. Narayanan, P. Rathi  
 Graduate student mentors: Sujeet Bhalerao, Stephen Zhou
- Spring 2022 [Quantum Capacity Bounds and Semidefinite Programming](#)  
 Illinois Geometry Lab project  
 Students: M. Bhatia, M. Camp, Y. Chen, P. Ge, E. Papoutsis, J. Solak, J. Wang, T. Xu, B. Yuan  
 Graduate student mentors: Joe Groszkiewicz, Peixue Wu

## Courses at University of Cambridge

- Fall 2015 Exercise classes for lecture “Quantum Information Theory”  
 Master’s course (Part III), ca. 30 students
- Fall 2014 Exercise classes for lecture “Quantum Information Theory”  
 Master’s course (Part III), ca. 30 students
- Fall 2013 Exercise classes for lecture “Quantum Information Theory”  
 Master’s course (Part III), ca. 30 students

## Extended research visits

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- Mar 2019 Kavli Institute for Theoretical Physics, Santa Barbara, CA, USA  
 Program “[Machine Learning for Quantum Many-Body Physics](#)”
- Dec 2017 Kavli Institute for Theoretical Physics, Santa Barbara, CA, USA  
 Program “[Quantum Physics of Information](#)”
- Sep 2017 Institute Henri Poincaré, Paris, France  
 Program “[Analysis in Quantum Information Theory](#)”

## Presentations

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### Contributed talks

<sup>†</sup>Talk given online. \*Talk delivered by co-author.

- Feb 2025\* *Quantum Information Processing (QIP)*, Raleigh, USA  
 Title: “Approximate Unitary  $k$ -Designs from Shallow, Low-Communication Circuits”
- Jan 2025\* *Innovations in Theoretical Computer Science (ITCS)*, New York, USA  
 Title: “Approximate Unitary  $k$ -Designs from Shallow, Low-Communication Circuits”
- Aug 2024\* *Beyond I.I.D. in Information Theory*, Champaign, USA

- Aug 2023 Title: “Approximate Unitary  $k$ -Designs from Shallow, Low-Communication Circuits”  
*Beyond I.I.D. in Information Theory*, Tübingen, Germany
- Jul 2023<sup>†</sup> Title: “Probing multipartite entanglement through persistent homology”  
*Theory of Quantum Computation, Communication and Cryptography*, Aveiro, Portugal
- Jun 2023\* Title: “On the Duality of Teleportation and Dense Coding”  
*IEEE International Symposium on Information Theory*, Taipei, Taiwan
- Sep 2022<sup>†</sup> Title: “On the Duality of Teleportation and Dense Coding”  
*Beyond I.I.D. in Information Theory*, Shenzhen, China
- Jun 2022<sup>†</sup> Title: “Bounding Quantum Capacities via Partial Orders and Complementarity”  
*IEEE International Symposium on Information Theory*, Espoo, Finland
- Jun 2022\* Title: “The platypus of the quantum channel zoo”  
*IEEE International Symposium on Information Theory*, Espoo, Finland
- Jun 2022\* Title: “On the separation of correlation-assisted sum capacities of multiple access channels”  
*IEEE International Symposium on Information Theory*, Espoo, Finland
- Mar 2022\* Title: “Bounding quantum capacities via partial orders and complementarity”  
*Quantum Information Processing*, Pasadena, USA
- Sep 2021<sup>†\*</sup> Title: “The platypus of the quantum channel zoo”  
*Beyond I.I.D. in Information Theory*, Taipei, Taiwan
- Aug 2021<sup>†</sup> Title: “The platypus of the quantum channel zoo”  
*International Congress on Mathematical Physics*, Geneva, Switzerland
- Jul 2021<sup>†</sup> Title: “Asymptotic performance of port-based teleportation”  
*Theory of Quantum Computation, Communication and Cryptography*, Riga, Latvia
- Nov 2020<sup>†</sup> Title: “Upper bounds on device-independent quantum key distribution rates”  
*Beyond I.I.D. in Information Theory*, Stanford, USA
- Nov 2020<sup>†\*</sup> Title: “Playing games with multiple access channels”  
*Beyond I.I.D. in Information Theory*, Stanford, USA
- Jun 2020<sup>†</sup> Title: “Upper bounds on device-independent quantum key distribution rates and a revised Peres conjecture”  
*Theory of Quantum Computation, Communication and Cryptography*, Riga, Latvia
- Jan 2020 Title: “Playing games with multiple access channels”  
*Quantum Information Processing*, Shenzhen, China
- Jul 2019 Title: “Error thresholds for arbitrary Pauli noise”  
*Beyond I.I.D. in Information Theory*, Sydney, Australia
- Feb 2019 Title: “Quantum codes from neural networks”  
*Southwest Quantum Information and Technology*, Albuquerque, USA
- Jan 2019\* Title: “Dephasure channel and superadditivity of coherent information”  
*Quantum Information Processing*, Boulder, USA
- Jul 2018 Title: “Asymptotic performance of port-based teleportation”  
*Beyond I.I.D. in Information Theory*, Cambridge, UK
- Jul 2017 Title: “Dephasure channel and superadditivity of coherent information”  
*Beyond I.I.D. in Information Theory*, Singapore, Singapore
- Jun 2017 Title: “Useful states and entanglement distillation”  
*IEEE International Symposium on Information Theory*, Aachen, Germany
- Jun 2017 Title: “Degradable states and one-way entanglement distillation”

- Jul 2016 *IEEE International Symposium on Information Theory*, Barcelona, Spain  
Title: “Strong converse theorem for state redistribution using Rényi entropies”
- Sep 2015 *Quantum Information Processing and Communication*, Leeds, UK  
Title: “Second Order Asymptotics of Quantum Mixed Source Coding”

### Invited talks

- Oct 2024 *Quantum Networks Workshop*, Institute for Mathematical and Statistical Innovation, Chicago, USA  
Title: “Enhancing classical communication networks with quantum resources”
- Aug 2024 *Symposium Bridging Quantum Information and Mathematical Physics*, University of Cambridge, Cambridge, UK  
Title: “On the duality of teleportation and dense coding”
- May 2024 *15th KCIK-ICTQT Symposium on Quantum Information*, Sopot, Poland  
Title: “Enhancing classical communication networks with quantum resources”
- May 2023 *Photonic interfaces for quantum technologies* (NSF QuIC-TAQS meeting), Arlington, USA  
Title: “Entanglement in weighted graph states and LOCC transformations”
- Nov 2021 *Mathematics Colloquium*, University of South Carolina, USA  
Title: “Symmetries in quantum information theory”
- Oct 2020 *Recent developments in quantum information and computing*, The Graduate Center, City University of New York, USA  
Title: “Symmetries and asymptotics of port-based teleportation”
- Jul 2020 *Tutte Colloquium*, Department of Combinatorics & Optimization, University of Waterloo, Canada  
Title: “Symmetries and asymptotics of port-based teleportation”
- Sep 2019 *57th Annual Allerton Conference on Communication, Control and Computing*, University of Illinois Urbana-Champaign, Monticello, USA  
Title: “Quantum codes from neural networks”
- Jul 2019 *Algebraic and Statistical ways into Quantum Resource Theories* (BIRS workshop), Banff, Canada  
Title: “Asymptotic performance of port-based teleportation”
- May 2019 *Symposium on Quantum resources and their application*, ICTQT & KCIK, Gdansk, Poland  
Title: “Quantum Codes from Neural Networks”
- Oct 2018 *Quantum Innovators in computer science and mathematics*, IQC, University of Waterloo, Canada  
Title: “Quantum Codes from Neural Networks”
- Apr 2018 *IQC Colloquium*, IQC, University of Waterloo, Canada  
Title: “Asymptotic performance of port-based teleportation”
- Nov 2017 *IEEE Information Theory Workshop*, Kaohsiung, Taiwan  
Title: “Quantum and private capacities of low-noise channels”
- Aug 2015 *Young Researchers in Mathematics*, University of Oxford, UK  
Title: “Second Order Asymptotics in Quantum Information Theory: Quantum Source Coding”
- Jul 2015 *Beyond I.I.D. in Information Theory*, Banff, Canada  
Title: “Strong converse theorems using Rényi entropies”



Aug 2014 *QUTE-Europe Summer School*, Smolenice, Slovakia  
Title: “Source coding for a mixed source: determination of second order asymptotics”

### Poster presentations

Feb 2019 *Southwest Quantum Information and Technology*, Albuquerque, USA  
Title: “Quantum codes from neural networks”

Jan 2019 *Quantum Information Processing*, Boulder, USA  
Title: “Quantum codes from neural networks”

Jul 2018 *Beyond I.I.D. in Information Theory*, Cambridge, UK  
Title: “Port-based teleportation in arbitrary dimension – asymptotics and a converse bound”

Jan 2018 *Quantum Information Processing*, Delft, Netherlands  
Title: “Bounds on quantum channel capacities from approximate additivity of channel information quantities”  
Title: “Quantum and private capacities of low-noise channels”

Jan 2017 *Quantum Information Processing*, Seattle, USA  
Title: “Degradable states and one-way entanglement distillation”

Jul 2016 *Beyond I.I.D. in Information Theory*, Barcelona, Spain  
Title: “Degradable states: Upper bounds on one-way distillable entanglement and quantum capacity”

Jan 2016 *Quantum Information Processing*, Banff, Canada  
Title: “Strong converse theorems using Rényi entropies”

Feb 2014 *Quantum Information Processing*, Barcelona, Spain  
Title: “A limit of the quantum Rényi divergence”

### Seminar talks

Sep 2024 *HKUST Guangzhou Quantum Seminar*, remote talk  
Title: “Enhancing classical communication networks with quantum resources”

Oct 2023 *Seminar*, Cornell University  
Title: “On the duality of teleportation and dense coding”

Jun 2023 *Seminar*, Ruhr Universität Bochum  
Title: “Probing multipartite entanglement through persistent homology”

Mar 2023 *Seminar*, Weizmann Institute of Science, Israel  
Title: “The platypus of the quantum channel zoo”

Nov 2022 *Seminar*, Virginia Tech, USA  
Title: “The platypus of the quantum channel zoo”

Sep 2022 *Applied Mathematics Seminar*, University of California Berkeley, USA  
Title: “The platypus of the quantum channel zoo”

Mar 2022 *Seminar*, University of Delaware, USA  
Title: “The platypus of the quantum channel zoo”

Sep 2021 *QST seminar*, Louisiana State University, USA  
Title: “Optimality of the pretty good measurement for port-based teleportation”

May 2021 *IQUIST Young researcher seminar*, University of Illinois at Urbana-Champaign, USA  
Title: “Entanglement in quantum communication”

- Mar 2021 *Quasar seminar*, University of Ottawa, Canada  
Title: “Symmetries and asymptotics of port-based teleportation”
- Apr 2020 *ICTQT Seminar*, ICTQT/KCIK, University of Gdansk, Poland  
Title: “Playing games with multiple access channels” (remote talk)
- Mar 2020 *IQUIST Seminar*, University of Illinois Urbana-Champaign, USA  
Title: “Symmetries and entanglement in channel coding problems” (remote talk)
- Feb 2020 *IQC Seminar*, IQC, University of Waterloo, Canada  
Title: “Error thresholds for arbitrary Pauli noise”
- Jan 2020 *KdVI Seminar*, Korteweg-de Vries Institute for Mathematics, University of Amsterdam, Netherlands  
Title: “Symmetries and entanglement in channel coding problems”
- Nov 2019 *QuICS Seminar*, QuICS, University of Maryland, USA  
Title: “Playing games with multiple access channels”
- Sep 2019 *IQUIST Seminar*, University of Illinois Urbana-Champaign, USA  
Title: “Symmetries and asymptotics of port-based teleportation”
- Mar 2019 *Machine Learning for Quantum Many-Body Physics*, KITP, University of California Santa Barbara, USA  
Title: “Quantum codes from neural networks”
- Nov 2018 *CQIF group seminar*, University of Cambridge, UK  
Title: “Asymptotic performance of port-based teleportation”
- Sep 2018 *IQQI Seminar*, Austrian Academy of Sciences & University of Vienna, Austria  
Title: “Dephasure channel and superadditivity of coherent information”
- Jun 2018 *Stanford University Seminar*, Stanford University, USA  
Title: “Dephasure channel and superadditivity of coherent information”
- May 2018 *MIT Seminar*, Massachusetts Institute of Technology, USA  
Title: “Asymptotic performance of port-based teleportation”
- May 2018 *PI Seminar*, Perimeter Institute for Theoretical Physics, Canada  
Title: “Asymptotic performance of port-based teleportation”
- Jan 2018 *QuSoft Seminar*, QuSoft, University of Amsterdam, Netherlands  
Title: “Useful states and entanglement distillation, and a toy channel exhibiting super-additivity of coherent information”
- Nov 2017 *Hunter College group seminar*, City University of New York, USA  
Title: “Bounds on quantum channel capacities from approximate additivity of channel information quantities”
- Sep 2017 *Analysis in Quantum Information Theory: Junior research seminar*, IHP, Paris, France  
Title: “Bounds on quantum channel capacities from approximate additivity of channel information quantities”
- Jul 2017 *IQI Seminar*, Caltech, USA  
Title: “Useful states and entanglement distillation”
- May 2017 *LSU group seminar*, Louisiana State University, USA  
Title: “On the quantum capacity of the qubit depolarizing channel”
- May 2017 *LSU group seminar*, Louisiana State University, USA  
Title: “Relative entropies and their use in quantum information theory”
- Apr 2017 *CTQM seminar*, University of Colorado Boulder, USA

	Title: “Upper bounds on the one-way and two-way distillable entanglement from suitable convex decompositions”
Apr 2017	<i>CQIF group seminar</i> , University of Cambridge, UK
	Title: “On the quantum capacity of the qubit depolarizing channel”
Feb 2016	<i>CAKE seminar</i> , University of Cambridge, UK
	Title: “Equality condition in the data processing inequality for the quantum relative entropy”
Jan 2016	IBM Thomas J. Watson Research Center, Yorktown Heights, USA
	Title: “Strong converse theorems using Rényi entropies”

## Academic service

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### Committee service

Jan 2021 – present	Science Advisory Board IQUIST, University of Illinois Urbana-Champaign
Aug 2024 – present	Education Committee IQUIST, University of Illinois Urbana-Champaign
Aug 2024 – May 2026	Graduate Affairs Committee Department of Mathematics, University of Illinois Urbana-Champaign
Aug 2023 – May 2024	Climate, Equity & Inclusion Committee Department of Mathematics, University of Illinois Urbana-Champaign
Aug 2022 – May 2023	Strategic Planning Committee Department of Mathematics, University of Illinois Urbana-Champaign
Aug 2021 – May 2022	Faculty search committee for tenure-track position in Applied Mathematics Department of Mathematics, University of Illinois Urbana-Champaign
Aug 2020 – Dec 2020	Quantum information group seminar Perimeter Institute for Theoretical Physics
Oct 2013 – Jun 2015	Organizing committee for the graduate community Girton College, University of Cambridge

### Conference organization

Aug 2024 – present	<i>Additivity problems in Quantum Information Theory</i> Banff International Research Station, Canada, July 12-17, 2026 (tentatively) Co-organizers: Nilanjana Datta, Debbie Leung, Graeme Smith
Sep 2023 – Aug 2024	<i>Bridging Quantum Information and Mathematical Physics</i> University of Cambridge, UK, August 14-16, 2024 Co-organizers: Nilanjana Datta, Mark Wilde Website: <a href="https://felixleditzky.info/bqm/">https://felixleditzky.info/bqm/</a>
Sep 2023 – Jul 2024	<i>Beyond IID in Information Theory</i> University of Illinois Urbana-Champaign, USA, July 29 - August 2, 2024 Co-organizers: Roy Araiza, Eric Chitambar, Marius Junge, Amanda Young Website: <a href="https://beyondiid2024.iquist.illinois.edu/">https://beyondiid2024.iquist.illinois.edu/</a>
Jan 2022 – Nov 2022	<i>QLA meets QIT II</i>

Illini Center, Chicago, USA, November 3-4, 2022  
 Co-organizers: Roy Araiza, Marius Junge, Thomas Sinclair  
 Website: <https://sites.google.com/view/qlameetsqitii/>

Aug 2021 – Jul 2022 *Theory of Quantum Computation, Communication, and Cryptography (TQC)*  
 University of Illinois Urbana-Champaign, USA, July 11-14, 2022  
 Co-organizers: Eric Chitambar, Emily Edwards  
 Website: <https://tqc2022-conference.iquist.illinois.edu/>

Jan 2018 – Jan 2019 *Quantum Information Processing (QIP)*  
 University of Colorado Boulder, USA, January 14-18, 2019  
 Co-organizer: Graeme Smith  
 Website: <http://jila.colorado.edu/qip2019>

Nov 2017 – Jun 2018 *Rocky Mountain Summit on Quantum Information*  
 University of Colorado Boulder, USA, June 25-29, 2018  
 Co-organizers: Graeme Smith, Mark M. Wilde  
 Website: <http://jila.colorado.edu/rmsqi>

### Editorial services

Mar 2022 – present Editor for *Quantum* (<https://quantum-journal.org/>)  
 Nov 2020 – present Editor for *Illinois Journal of Mathematics* (<https://ijm.math.illinois.edu/>)

### Referee services

Mar 2025 – Apr 2025 Member of program committee (PC) for conference TQC 2025  
 Jan 2025 – Apr 2024 PC member for conference [ISIT 2025](#)  
 Feb 2024 – Apr 2024 PC member for conference (<https://tqc-conference.org/>)  
 Sep 2023 – Nov 2023 PC member for conference (<https://qip2024.tw/>)  
 Mar 2023 – Apr 2023 PC member for conference [Beyond IID in Information Theory](#)  
 Oct 2022 – Nov 2022 PC member for conference [QIP 2023](#)  
 Feb 2022 – Mar 2022 PC member for conference [TQC 2022](#)  
 Aug 2021 PC member for conference [Beyond IID in Information Theory](#)  
 Mar 2021 – Apr 2021 PC member for conference [TQC 2021](#)  
 April 2018 PC member for conference [CEQIP 2018](#)  
 Oct 2013 – present Reviewing for: *IEEE Transactions on Information Theory*, *Communications in Mathematical Physics*, *Journal of Mathematical Physics*, *Letters in Mathematical Physics*, *Mathematical Programming*, *Physical Review Letters*, *Physical Review A*, *Nature Physics*, *Nature Communications*, *npj Quantum Information*, *New Journal of Physics*, *Quantum*, *Quantum Information Processing*, various conferences (*ISIT*, *ITW*, *QIP*, *TQC*, *AQIS*, *CEQIP*, *Q-Turn*, *STOC*)

### Language & IT skills

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**Languages:** German (native), English (fluent), Spanish (conversational), Latin (translation)  
**IT:** Matlab, Mathematica, Python, HTML, CSS, Linux,  $\LaTeX$

## **Interests**

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Music, playing guitar, reading, playing football, running, traveling