Antoine Allard
Curriculum Vitæ

Associate Professor
Département de physique, de génie physique et d'optique
1045 avenue de la Médecine
Université Laval
Québec (Québec)
G1V 0A6, Canada

Office : VCH-3215
Email : antoine.allard@phy.ulaval.ca
W3 : antoineallard.info
ORCID : 0000-0002-8208-9920

Academic Positions

Université Laval — Québec, Canada
Associate Professor — 2023–present

- ⋆ Sentinelle Nord Research Chair on Applications and Theory of Network Analysis (ended July 2024)
- ○ Codirector of the Dynamica Research Lab on the structure and the dynamics of complex systems
- ⋆ 2024 Erdős-Rényi Prize in Network Science
- ⋆ Board member of the Centre Interdisciplinaire en Modélisation Mathématique de l'Université Laval (CIMMUL)
- ⋆ Board member of the Network Science Society
- ○ Associate editor at npj Complexity

Universidad de Zaragoza — Zaragoza, Spain
External member of the Institute for Biocomputation and Physics of Complex Systems — 2023–present

University of Vermont — Burlington, USA
External faculty at the Vermont Complex Systems Institute — 2021–present

> *"Created with the intention of honoring scholars in our external network who make complex systems a welcoming intellectual community and keep meaningful collaborations with the Institute."*

CERVO Brain Research Centre — Québec, Canada
Associate Researcher — 2020–present

Université Laval — Québec, Canada
Assistant Professor — 2018–2023

- ⋆ Sentinelle Nord Research Chair on Applications and Theory of Network Analysis
- ○ Codirector of the Dynamica Research Lab on the structure and the dynamics of complex systems
- ⋆ Board member of the Centre Interdisciplinaire en Modélisation Mathématique de l'Université Laval (CIMMUL)

Universitat de Barcelona — Barcelona, Spain
Postdoctoral Fellow — 2018

- ⋆ Awarded the Juan de la Cierva – Incorporación postdoctoral fellowship

Centre de Recerca Matemàtica — Bellaterra, Spain
Senior Research Fellow — 2017

Universitat de Barcelona — Barcelona, Spain
Postdoctoral Fellow — 2014–2016

- ⋆ Awarded the Fonds de recherche du Québec – Nature et Technologies postdoctoral fellowship

Education

Université Laval — Québec, Canada
Ph.D. in Physics — 2009–2014
- ○ Thesis Title: *Percolation sur graphes aléatoires: Modélisation et description analytique*[1]
- ⋆ Awarded the CIHR Frederick Banting and Charles Best Canada Graduate Scholarship
- ⋆ Thesis added to the Board of Honor for receiving the highest overall mark

Santa Fe Institute — Santa Fe, NM, USA
Complex Systems Summer School — 2011

Université Laval — Québec, Canada
M.Sc. in Physics — 2006–2008
- ○ Thesis Title: *Modélisation Mathématique en Epidémiologie par Réseaux de Contacts: Introduction de l'Hétérogénéité dans la Transmissibilité*[2]
- ⋆ Thesis added to the Board of Honor for receiving the highest overall mark

Université Laval — Québec, Canada
B.Sc. in Physics (Theoretical Physics option) — 2003–2006
- ⋆ Rouge et Or Distinction for excellence in academic undergraduate results
- ⋆ Nominated 2003 AESGUL Prize for "Student of the year" (chosen by the peers)

Funding and Awards

Team funding
- ○ Soutien à l'organisation de congrès internationaux du Cercle des ambassadeurs de Québec et des Fonds de recherche du Québec (FRQ), 2024 (10k CAD)
- ○ Fonds d'accélération des collaborations en santé, *Consortium québécois sur la découverte du médicament*, 2021–2024 (15.32M CAD)
- ○ Alliance Grant, *Natural Sciences and Engineering Research Council of Canada*, 2021–2026 (481k CAD)
- ○ Sentinelle Nord Research Project, *Canada First Research Excellence Fund*, 2020–2023 (750k CAD)

Individual funding
- ○ Discovery Grant, *Natural Sciences and Engineering Research Council of Canada*, 2024–2030 (340k CAD)
- ○ Discovery Grant, *Natural Sciences and Engineering Research Council of Canada*, 2019–2025 (157k CAD)
- ○ Sentinelle Nord Research Chair, *Canada First Research Excellence Fund*, 2018–2024 (500k CAD)

Research group funding
- ○ *Natural Sciences and Engineering Research Council of Canada*, 2018–2024 (145k CAD), 2024–2030 (200k CAD)
- ○ *Fonds de recherche du Québec – Nature et Technologies*, 2018–2024 (195k CAD), 2024–2030 (98k CAD)
- ○ *Sentinelle Nord (Canada First Research Excellence Fund)*, 2018–2024 (121 CAD), 2024–2030 (47k CAD)

Individual funding as postdoctoral fellow, graduate student or undergraduate student
- ○ Juan de la Cierva – Incorporación (postdoctoral fellowship), *Ministerio de Economía, Industria y Competitividad de España*, 2017–2019 (50k EUR)
- ○ Postdoctoral Fellowship, *Fonds de recherche du Québec – Nature et Technologies*, 2014–2016 (65k CAD)
- ○ Frederick Banting and Charles Best Canada Graduate Scholarships - Doctoral Awards, *Canadian Institutes of Health Research*, 2009–2012 (105k CAD)
- ○ Doctoral Research Scholarship, *Fonds de recherche du Québec – Nature et Technologies*, 2008 (63k CAD; declined)
- ○ Doctoral Research Scholarship, *Fondation de l'Université Laval*, 2008 (36k CAD; declined)
- ○ Undergraduate Student Research Award, *Natural Sciences and Engineering Research Council of Canada*, 2005–2006 (9k CAD)

Awards

- 2024 Erdős-Rényi Prize in Network Science (Network Science Society)

  > *"For the breadth and depth of his contributions to modeling complex systems as networks, including the geometry of networks and the role of heterogeneity and superspreading in contemporary diseases and complex contagions."*

- 2024 Star Teacher Prize (based on students evaluation)
- 2024 ADEPUL Prize for "Teacher of the year" (elected by the undergraduate students)
- 2022 Star Teacher Prize (based on students evaluation)
- Nominated 2022 AESGUL Prize for "Teacher of the year" (elected by the undergraduate students)
- 2021 ADEPUL Prize for "Teacher of the year" (elected by the undergraduate students)
- 2020 ADEPUL Prize for "Teacher of the year" (elected by the undergraduate students)
- Nominated 2020 AESGUL Prize for "Teacher of the year" (elected by the undergraduate students)
- 2019 Star Teacher Prize (based on students evaluation)
- 2019 ADEPUL Prize for "Teacher of the year" (elected by the undergraduate students)
- 2019 AESGUL Prize for "Teacher of the year" (elected by the undergraduate students)
- Board of Honor for a Ph.D.'s Thesis (highest distinction), Faculty of Graduate Studies, Université Laval, 2014
- Nominated 2013 AESGUL Prize for "Staff member of the year" as the Teaching Assistant of PHY-3000 Statistical Physics (elected by the undergraduate students), 2014
- Board of Honor for a Master's Thesis (highest distinction), Faculty of Graduate Studies, Université Laval, 2009
- Third Place at the Student Competition (Poster Presentation), Congress of the Canadian Association of Physicists, Quebec City, 2008
- 2006 AESGUL Prize for "Staff member of the year" as the Teaching Assistant of PHY-1002 Mathematical Physics II (elected by the undergraduate students), 2007
- Rouge et Or Distinction for excellence in academic undergraduate results, 2006
- Nominated 2003 AESGUL Prize for "Student of the year" (chosen by the peers), 2004

Teaching

Université Laval — Québec, Canada

Teacher

- PHY-2502 Nonlinear Dynamics, Chaos and Complexity — 2019, 2022, 2024
- PHY-3000 Statistical Physics — 2018–2024
- PHY-3500 Computational Physics — 2020, 2023–2025
- PHY-7008 Deep Learning: Theory and applications — 2019
- PHY-7009 Non-Euclidean and Differential Geometry — 2024
- PHY-7053 Theory of Complex Systems and Networks — 2020–2022
  - ⋆ Awarded the Star Teacher prize (based on students evaluation) 2019, 2022, 2024
  - ⋆ Awarded the ADEPUL prize for "Teacher of the year" (elected by the undergraduate students) 2019, 2020, 2021, 2024
  - ⋆ Awarded the AESGUL prize for "Teacher of the year" (elected by the undergraduate students) 2019
  - ⋆ Nominated for the AESGUL prize for "Teacher of the year" (elected by the undergraduate students), 2020, 2022

Mentoring

Postdoctoral researchers[3]

- Azénor Bideault‡, *Université Laval*, 2022–present
- Ilhem Bouderbala, *Université Laval*, 2020–2022 (now research associate at Université Laval)
- Marina Vegué Llorente, *Université Laval*, 2020–2022 (now faculty at Universitat Politècnica de Catalunya)

[3] Acting/acted as co-advisor denoted by ‡.

Ph.D. students[3,4]

- Gabriel Bergeron‡, *Université Laval*, 2022–present
- Simon Lizotte, *Université Laval*, 2022–present
- Zahra Yazdani Najafabadi‡ *Université Laval*, 2022–present
- Olivier Ribordy, *Université Laval*, 2023–present
- François Thibault, *Université Laval*, 2022–present
- Vincent Thibeault, *Université Laval*, 2020–present
- Charles Murphy, *Université Laval*, 2018–2025 (now data scientist in the private sector)
- Guillaume St-Onge*, *Université Laval*, 2020–2022 (link to thesis; now faculty at Northeastern University)

M.Sc. students[3,4]

- Félix Olivier, *Université Laval*, Summer 2025
- Benjamin Claveau‡, *Université Laval*, 2023–present
- Jérémi Lesage, *Université Laval*, 2022–2025
- Heikel Jarras‡ *Université Laval*, 2021–2023 (link to thesis; now data scientist in the private sector)
- Simon Lizotte*, *Université Laval*, 2020–2022 (link to thesis; now PhD at Université Laval)
- Olivier Ribordy, *Université Laval*, 2020–2022 (link to thesis; now PhD at Université Laval)
- François Thibault, *Université Laval*, 2020–2022 (link to thesis; now PhD at Université Laval)
- Béatrice Désy*, *Université Laval*, 2019–2022 (link to thesis; now PhD at Victoria University of Wellington)
- Francis Normand‡ *Université Laval*, 2019–2022 (link to thesis; now PhD at Monash University)
- Charles Murphy‡ *Université Laval*, 2016–2017 (link to thesis; now PhD at Université Laval)

B.Sc. interns

- Félix Olivier, *Université Laval*, Summer 2024
- Olivier Lapointe-Gagné, *Université Laval*, Summer 2021
- Pierre-Luc Larouche, *Université Laval*, Summer 2021
- Jérémi Lesage, *Université Laval*, Summer 2021
- Bastian Raulier, *Université Laval*, Summer-Fall 2020
- Olivier Ribordy, *Université Laval*, Summer 2019
- François Thibault, *Université Laval*, Summer 2019

Bachelor's thesis[3]

- Émile Baril, *Université Laval*, 2022
- Simon Lizotte, *Université Laval*, 2020
- François Thibault, *Université Laval*, 2020
- Marta Cavero Lázaro‡, *Universitat Autònoma de Barcelona*, 2018

Organizing Activities

Complex Networks Winter Workshop (CNWW 2025) — Québec, Canada
Co-organizer — December 2025

- In collaboration with the Vermont Complex Systems Institute

[4]Thesis added to the Board of Honor, the highest distinction at Université Laval, denoted by ∗.

International School and Conference on Network Science (NetSci 2024) — Québec, Canada
Conference co-chair — June 2024

- In collaboration with the Vermont Complex Systems Institute
- Flagship conference of the Network Science Society
- ⋆ Awarded the Soutien à l'organisation de congrès internationaux du Cercle des ambassadeurs de Québec et des Fonds de recherche du Québec (FRQ), 2024
- ⋆ Elected "Scientific event of the year", Québec City, 2025

Complex Networks Winter Workshop (CNWW 2023) — Québec, Canada
Co-organizer — December 2023

- In collaboration with the Vermont Complex Systems Institute

Advanced Field School in Computational Ecology (Ecology 2023) — Val Morin, Canada
Co-organizer — May 2023

- Organized by Sentinelle Nord and BIOS^2

Complex Networks Winter Workshop (CNWW 2020) — Québec, Canada
Codirector — January 2021

- In collaboration with Sentinelle Nord and the Vermont Complex Systems Institute

Complex Networks Winter Workshop (CNWW 2019) — Québec, Canada
Codirector — December 2019

- In collaboration with Sentinelle Nord and the Vermont Complex Systems Institute

International School and Conference on Network Science (NetSci 2019) — Burlington VT, USA
School, Poster Session, and Satellite Co-chair — May 2019

- Organized by the Vermont Complex Systems Institute

Complex Networks Winter Workshop (CNWW 2018) — Québec, Canada
Codirector — December 2018

- In collaboration with Sentinelle Nord, the Vermont Complex Systems Institute and the Network Science Institute

Contagion & Networks (ContNet 2018) — Paris, France
Co-organizer — June 2018

- Satellite symposium of the International School and Conference on Network Science (NetSci 2018)
- In collaboration with B. M. Althouse, L. Hébert-Dufresne and S. V. Scarpino

Contagion & Networks (ContNet 2017) — Indianapolis IN, USA
Co-organizer — June 2017

- Satellite symposium of the International School and Conference on Network Science (NetSci 2017)
- In collaboration with B. M. Althouse, L. Hébert-Dufresne and S. V. Scarpino

Reviewing Activities

Editorial board

- Associate editor, npj Complexity (first issue scheduled mid 2024), 2023–present
- Guest editor, npj Complexity's Networks and Space collection, 2023–2025

Grant review

- Discovery Grants, Physics evaluation group member, *Natural Sciences and Engineering Research Council of Canada*, 2024–present
- Discovery Grants, External reviewer, *Natural Sciences and Engineering Research Council of Canada*, 2020, 2023
- Open Competition Domain Science – M, External reviewer, *Nederlandse Organisatie voor Wetenschappelijk Onderzoek, The Netherlands*, 2024
- PRELUDIUM Grants, External reviewer, *Narodowe Centrum Nauki, Poland*, 2024
- OPUS Grants, External reviewer, *Narodowe Centrum Nauki, Poland*, 2020

Program committee

- Conference on Complex Systems (CCS) 2022, 2024, 2025
- International School and Conference on Network Science (NetSci) 2018–2020, 2022–2025
- Workshop on Complex Networks in Banking and Finance, 2024
- International Winter Conference of the Network Science Society (NetSciX) 2024
- International Conference on Complex Networks (CompleNet) 2020, 2021, 2024
- French Regional Conference on Complex Systems (FRCCS) 2021, 2023
- International Conference on Complex Networks and their Applications (Complex Networks) 2016–2019, 2021, 2022
- 10th Conference on Network Modeling and Analysis (MARAMI) 2019
- Mapping Complexity: Foundations and Applications of Network Geometry workshop (MACFANG) 2017

Thesis jury

- Vincent Coulombe (PhD exam, *Université Laval*, 2024)
- Karin Ait Braham (PhD exam, *Université Laval*, 2024)
- Gabriel Hémond (Master's thesis, *Université Laval*, 2024)
- Cédric Bélanger (PhD thesis, *Université Laval*, 2023)
- Meriem Khalfoun (Master's thesis, *Université Laval*, 2023)
- Jeson Hermans (Master's thesis, *Université Laval*, 2023)
- Boris Gbeasor (Master's thesis, *Université Laval*, 2022)
- Geneviève Boudreau (Master's thesis, *Université Laval*, 2022)
- Marianne Gratton (Master's thesis, *Université Laval*, 2022)
- Xavier Roy-Pomerleau (Master's thesis, *Université Laval*, 2020)
- Vincent Thibeault (Master's thesis, *Université Laval*, 2020)
- Charles Joachim-Paquet (Master's thesis, *Université Laval*, 2020)
- Edward Laurence (PhD thesis, *Université Laval*, 2020)
- Guillaume St-Onge (PhD exam, *Université Laval*, 2019)
- Edward Laurence (PhD seminar, *Université Laval*, 2018)
- Edward Laurence (PhD exam, *Université Laval*, 2017)
- Jaume Palmer Real (Master's thesis, *Universitat Autònoma de Barcelona*, 2017)

Scholarships

- Doctoral Training Scholarships, *Fonds de recherche du Québec: Nature et technologies*, 2024
- Larkin Kerwin undergraduate scholarship, *Université Laval*, 2019, 2023
- Marcel-Dessureault undergraduate scholarship, *Université Laval*, 2022
- Byron-T. Darling graduate scholarship, *Université Laval*, 2020

Tenure application

- External reviewer, Toronto Metropolitan University, 2024
- External reviewer, University of Vermont, 2025

Scientific journals

Applied Network Science, Bioinformatics, BMC Medicine, Communications in Nonlinear Science and Numerical Simulation, Communications Physics, Discrete Dynamics in Nature and Society, Europhysics Letters, IEEE's Transactions on Network Science and Engineering, Journal of Complex Networks, Nature Communications, Network Neuroscience, Physica A, Physical Review E, Physical Review Letters, Physical Review Research, Physical Review X, PLOS Computational Biology, PLOS ONE, PNAS, Science Advances, Scientific Data, Scientific Reports

Book proposals

Cambridge University Press

Community Services and Administrative Activities

New papers in Network Science — Online

Sole webmaster, reviewer and administrator — 2017–present

- Systematic aggregator of new publications touching the field of network science (over 4.7k subscribers as of Mar. 2025)

- New publications are publicly available to the community via Twitter, Mastodon, Bluesky, and a mailing list

Network Science Society (NSS)
Elected board member — 2025–present

Centre Interdisciplinaire en Modélisation Mathématique (CIMMUL) — Université Laval
Elected board member — 2020–present

Reconditioning of the research facilities in the Alexandre-Vachon building — Université Laval
Consulting committee member — 2020

Publications and Presentations

Manuscripts in preparation[5,6,7]

[D8] *One pathogen does not an epidemic make: A review of interacting contagions, diseases, beliefs, and stories*, L. Hébert-Dufresne, Y.-Y. Ahn, **A. Allard**, J. W. Crothers, P. S. Dodds, M. Galesic, F. Ghanbarnejad, D. Gravel, R. A. Hammond, K. Lerman, J. Lovato, J. J. Openshaw, S. V. Scarpino, G. St-Onge, T. R. Tangherlini and J.-G. Young

[D7] *The role of seasonality and migration on the stability of northern ecosystems: the case of Bylot Island*, A. Bideault, D. Gravel, **A. Allard** and P. Legagneux

[D6] *Abnormal functional and structural properties of hiPSC-derived neurons in schizophrenia during neurodifferentiation*, Z. Yazdani, E. Bélanger, **A. Allard**, P. Marquet and P. Desrosiers

[D5] *Emergence of geometric connectivity gradients in spatially embedded neuronal networks*, A. Légaré, O. Ribordy, P. De Koninck, **A. Allard**† and P. Desrosiers†

[D4] *Local topological patterns and geometry parsimoniously explains the mesoscale organization of empirical complex networks*, J. Lesage, M. Á. Serrano, M. Boguñá and **A. Allard**

[D3] *The impact of context-dependent behavior in epidemic spreading with large groups*, O. Ribordy, C. Granell, L. Hébert-Dufresne, A. Arenas and **A. Allard**

[D2] *Extraction of structural properties based on graph theory during neurodevelopment of cultured neurons using machine learning and digital holographic microscopy*, Z. Yazdani, E. Bélanger, M. Moreaud, J. Llinares, **A. Allard**, P. Marquet and P. Desrosiers

[D1] *Optimal Mesoscopic Structure of General Binary-State Dynamics on Networks*, C. Murphy, J. Lesage, G. St-Onge, L. Hébert-Dufresne and **A. Allard**

Submitted manuscripts and preprints[6,7]

[P7] *Kuramoto meets Koopman: Constants of motion, symmetries, and network motifs*, V. Thibeault, B. Claveau, **A. Allard** and P. Desrosiers, arXiv:2504.06248

[P6] *Impersonating predators and prey to study trophic interactions through real-life simulations*, D. Bolduc, F. Dulude-de Broin, G. Bergeron, C. Villeneuve, M. Weiss-Blais, C. Couloigner, R. Dubourg, M. Fraser Franco, F. Banville, L. Moisan, P.-O. Montiglio, D. Fortin, F. Thibault, **A. Allard**, C. Gaudreau-Rousseau, I. Roca, A. Durand, C. Massé, E. Barreau, T. A. Hiltunen, E. Madsen, M. Lapointe St-Pierre, A. Engler, A. Kato, M. Le Goff, M. I. Arce-Plata, N. R. Forero-Muñoz, S. Gallais, D. Gravel, P. Legagneux, *Under consideration at Methods in Ecology and Evolution (submitted; manuscript MEE-25-01-040)*

[P5] *On the reconstruction limits of complex networks*, C. Murphy, S. Lizotte, F. Thibault, V. Thibeault, P. Desrosiers and **A. Allard**, *Under consideration at Science Advances (under review; manuscript adw4134)*, arXiv:2501.01437

[P4] *On the Uniform Sampling of the Configuration Model with Centrality Constraints*, F. Thibault, L. Hébert-Dufresne and **A. Allard**, arXiv:2409.20493

[P3] *A probabilistic methodology to reconstruct biodiversity from implicit interactions with indicator species along latitudinal co-occurrence networks*, I. Bouderbala, J. A. Tremblay, D. Fortin, **A. Allard** and P. Desrosiers, bioRxiv

[P2] *On the accuracy of message-passing approaches to percolation in complex networks*, **A. Allard** and L. Hébert-Dufresne, arXiv:1906.10377

[5] To qualify for this section, a manuscript must be mostly completed and accepted for a presentation at an international conference.
[6] Students or postdoctoral researchers who worked under my supervision are underlined.
[7] Equal contributions are denoted by †.

[P1] *The network epidemiology of an Ebola epidemic*, L. Hébert-Dufresne, J.-G. Young, J. Bedson, L. A. Skrip, D. Pedi, M. F. Jalloh, B. Raulier, O. Lapointe-Gagné, A. Jambai, **A. Allard** and B. M. Althouse, *Under consideration at Nature (second round of reviews; manuscript 2020-10-19457)*, arXiv:2111.08686

Refereed research publications[6,7]

[A66] *Modeling critical connectivity constraints in random and empirical networks*, L. Hébert-Dufresne, M. Pósfai and **A. Allard**, To appear in Phys. Rev. Research

[A65] *Symmetry-driven embedding of networks in hyperbolic space*, S. Lizotte, J.-G. Young and **A. Allard**, To appear in Commun. Phys.

[A64] *Pandemic monitoring with global aircraft-based wastewater surveillance networks*, G. St-Onge, J. T. Davis, L. Hébert-Dufresne, **A. Allard**, A. Urbinati, S. V. Scarpino, M. Chinazzi and A. Vespignani, Nat. Med. (2025)
⋆ Featured in Nature Medicine's News & Views.

[A63] *Firing rate distributions in plastic networks of spiking neurons*, M. Vegué, **A. Allard** and P. Desrosiers, Netw. Neurosci. 9, 447–474 (2025)

[A62] *Network compression with configuration models and the minimum description length*, L. Hébert-Dufresne, J.G. Young, A. Daniels, A. Kirkley and **A. Allard**, Phys. Rev. E 110, 034305 (2024)

[A61] *Duality between predictability and reconstructability in complex systems*, C. Murphy, V. Thibeault, **A. Allard** and P. Desrosiers, Nat. Commun. 15, 4478 (2024)

[A60] *Escherichia coli CRISPR arrays from early life fecal samples preferentially target prophages*, M. B. Dion, S. A. Shah, L. Deng, J. Thorsen, J. Stokholm, K. A. Krogfelt, S. Schjørring, P. Horvath, **A. Allard**, D. S. Nielsen, M.-A. Petit and S. Moineau, ISME J. 18, wrae005 (2024)

[A59] *NBS-SNI, an extension of the Network-based statistic: Abnormal functional connections between important structural actors*, F. Normand, M. Gajwani, D. C. Côté and **A. Allard**, Netw. Neurosci. 8, 44–80 (2024)

[A58] *The low-rank hypothesis of complex systems*, V. Thibeault, **A. Allard** and P. Desrosiers, Nat. Phys. 20, 294–302 (2024)
⋆ Featured in Nature Physics' News & Views.
⋆ Featured on the cover of Nature Physics.

[A57] *Geometric description of clustering in directed networks*, **A. Allard**, M. Á. Serrano and M. Boguñá, Nat. Phys. 20, 150–156 (2024)

[A56] *The umbrella value of caribou management strategies for biodiversity conservation in boreal forests under global change*, G. Labadie, I. Bouderbala, Y. Boulanger, J.-M. Béland, C. Hébert, **A. Allard**, M. Hebblewhite and D. Fortin, Sci. Total Environ. 907, 168087 (2024)

[A55] *Nonlinear bias toward complex contagion in uncertain transmission settings*, G. St-Onge, L. Hébert-Dufresne and **A. Allard**, Proc. Natl. Acad. Sci. USA 121, e2312202121 (2023)

[A54] *The unintended consequences of inconsistent pandemic control policies*, B. M. Althouse, B. Wallace, B. Case, S. V. Scarpino, **A. Allard**, A. M. Berdahl, E. R. White and L. Hébert-Dufresne, BMC Global Public Health 1, 28 (2023)

[A53] *Hypergraph reconstruction from uncertain pairwise observations*, S. Lizotte, J.-G. Young and **A. Allard**, Sci. Rep. 13, 21364 (2023)

[A52] *The $\mathcal{D}$-Mercator method for the multidimensional hyperbolic embedding of real networks*, R. Jankowski, **A. Allard**, M. Boguñá and M. Á. Serrano, Nat. Commun. 14, 7585 (2023)
⋆ Featured in Nature communications' Editors' Highlights.

[A51] *Temporal and probabilistic forecasts of epidemic interventions*, M. C. Boudreau, A. J. Allen, N. J. Roberts, **A. Allard** and L. Hébert-Dufresne, Bull. Math. Biol. 85, 118 (2023)

[A50] *Hierarchical team structure and multidimensional localization (or siloing) on networks*, L. Hébert-Dufresne, G. St-Onge, J. Meluso, J. P. Bagrow and **A. Allard**, J. Phys. Complex. 4, 035002 (2023)

[A49] *Exact and rapid linear clustering of networks with dynamic programming*, A. Patania, **A. Allard** and J.-G. Young, Proc. R. Soc. A 479, 20230159 (2023)

[A48] *Dimension reduction of dynamics on modular and heterogeneous directed networks*, M. Vegué, V. Thibeault, P. Desrosiers and **A. Allard**, PNAS Nexus 2, pgad150 (2023)

[A47] *Dimension matters when modeling network communities in hyperbolic spaces*, B. Désy, P. Desrosiers and **A. Allard**, PNAS Nexus 2, pgad136 (2023)

[A46] *Effects of global change on bird and beetle populations in boreal forest landscape: An assemblage dissimilarity analysis*, I. Bouderbala, G. Labadie, J.-M. Leblanc, Y. Boulanger, C. Hébert, P. Desrosiers, **A. Allard** and D. Fortin, Divers. Distrib. 29, 757–773 (2023)

[A45] *Long-term effect of forest harvesting on boreal species assemblages under climate change*, I. Bouderbala, G. Labadie, J.-M. Leblanc, J. A. Tremblay, Y. Boulanger, C. Hébert, P. Desrosiers, **A. Allard** and D. Fortin, PLOS Clim. 2, e0000179 (2023)

[A44] *The Role of Directionality, Heterogeneity, and Correlations in Epidemic Risk and Spread*, **A. Allard**, C. Moore, S. V. Scarpino, B. M. Althouse and L. Hébert-Dufresne, SIAM Rev. 65, 471–492 (2023)

[A43] *Predicting the diversity of early epidemic spread on networks*, A. J. Allen, M. C. Boudreau, N. J. Roberts, **A. Allard** and L. Hébert-Dufresne, Phys. Rev. Research 4, 013123 (2022)

[A42] *Influential groups for seeding and sustaining nonlinear contagion in heterogeneous hypergraphs*, G. St-Onge, I. Iacopini, V. Latora, A. Barrat, G. Petri, **A. Allard** and L. Hébert-Dufresne, Commun. Phys. 5, 25 (2022)

[A41] *Limits of Individual Consent and Models of Distributed Consent in Online Social Networks*, J. Lovato, **A. Allard**, R. Harp, J. Onaolapo and L. Hébert-Dufresne, FAccT'22 2251–2262 (2022)

[A40] *Universal nonlinear infection kernel from heterogeneous exposure on higher-order networks*, G. St-Onge, H. Sun, **A. Allard**, L. Hébert-Dufresne and G. Bianconi, Phys. Rev. Lett. 127, 158301 (2021)

[A39] *Deep learning of contagion dynamics on complex networks*, C. Murphy, E. Laurence and **A. Allard**, Nat. Commun. 12, 4720 (2021)

⋆ Featured in Nature communications' Editors' Highlights.

[A38] *Social Confinement and Mesoscopic Localization of Epidemics on Networks*, G. St-Onge, V. Thibeault, **A. Allard**, L. J. Dubé and L. Hébert-Dufresne, Phys. Rev. Lett. 126, 098301 (2021)

[A37] *Master equation analysis of mesoscopic localization in contagion dynamics on higher-order networks*, G. St-Onge, V. Thibeault, **A. Allard**, L. J. Dubé and L. Hébert-Dufresne, Phys. Rev. E 103, 032301 (2021)

[A36] *Beyond R_0: Heterogeneity in secondary infections and probabilistic epidemic forecasting*, L. Hébert-Dufresne, B. M. Althouse, S. V. Scarpino and **A. Allard**, J. R. Soc. Interface 17, 20200393 (2020)

[A35] *Superspreading events in the transmission dynamics of SARS-CoV-2: opportunities for interventions and control*, B. M. Althouse, E. A. Wenger, J. C. Miller, S. V. Scarpino, **A. Allard**, L. Hébert-Dufresne and H. Hu, PLOS Biol. 18, e3000897 (2020)

[A34] *Localization, bistability and optimal seeding of contagions on higher-order networks*, G. St-Onge, **A. Allard** and L. Hébert-Dufresne, Artificial Life Conference Proceedings, 567–569 (2020)

[A33] *Geometric renormalization unravels self-similarity of the multiscale human connectome*, M. Zheng, **A. Allard**, P. Hagmann, Y. Alemán-Gómez and M. Á. Serrano, Proc. Natl. Acad. Sci. USA 117, 20244 (2020)

[A32] *Navigable maps of structural brain networks across species*, **A. Allard** and M. Á. Serrano, PLOS Comput. Biol. 16, e1007584 (2020)

[A31] *Genome-scale modeling of metabolism in the polar diatom Fragilariopsis cylindrus underscores the strong robustness of growth rate in response to cellular perturbations*, M. Lavoie, B. Saint-Béat, J. Strauss, S. Guérin, **A. Allard**, S. V. Hardy, A. Falciatore and J. Lavaud, Biology 9, 30 (2020)

[A30] *Mercator: uncovering faithful hyperbolic embeddings of complex networks*, G. García-Pérez†, **A. Allard**†, M. Á. Serrano and M. Boguñá, New J. Phys. 21, 123033 (2019)

[A29] *Smeared phase transitions in percolation on real complex networks*, L. Hébert-Dufresne and **A. Allard**, Phys. Rev. Research 1, 013009 (2019)

[A28] *Percolation and the effective structure of complex networks*, **A. Allard** and L. Hébert-Dufresne, Phys. Rev. X 9, 011023 (2019)

[A27] *Geometric evolution of complex networks with degree correlations*, C. Murphy, **A. Allard**, E. Laurence, G. St-Onge and L. J. Dubé, Phys. Rev. E 97, 032309 (2018)

[A26] *The risk of sustained sexual transmission of Zika is underestimated*, **A. Allard**†, B. M. Althouse†, L. Hébert-Dufresne† and S. V. Scarpino†, PLOS Pathog. 13, e1006633 (2017)

[A25] *Asymmetric percolation drives a double transition in sexual contact networks*, **A. Allard**, B. M. Althouse, S. V. Scarpino and L. Hébert-Dufresne, Proc. Natl. Acad. Sci. USA 114, 8969–8973 (2017)

[A24] *Strategic tradeoffs in competitor dynamics on adaptive networks*, L. Hébert-Dufresne, **A. Allard**, P.-A. Noël, J.-G. Young and E. Libby, Sci. Rep. 7, 7576 (2017)

[A23] *The geometric nature of weights in real complex networks*, **A. Allard**, M. Á. Serrano, G. García-Pérez and M. Boguñá, Nat. Commun. 8, 14103 (2017)

⋆ Featured in Nature Physics' Research highlights.

⋆ Featured in Nature Communications' Web collection on complex systems.

[A22] *The effect of a prudent adaptive behaviour on disease transmission*, S. V. Scarpino, **A. Allard** and L. Hébert-Dufresne, Nat. Phys. 12, 1042–1046 (2016)
⋆ Featured in Nature Physics' News & Views.

[A21] *The hidden hyperbolic geometry of international trade: World Trade Atlas 1870–2013*, G. García-Pérez, M. Boguñá, **A. Allard** and M. Á. Serrano, Sci. Rep. 6, 33441 (2016)

[A20] *Growing networks of overlapping communities with internal structure*, J.-G. Young, L. Hébert-Dufresne, **A. Allard** and L. J. Dubé, Phys. Rev. E 94, 022317 (2016)

[A19] *Multi-scale structure and topological anomaly detection via a new network statistic: The onion decomposition*, L. Hébert-Dufresne, J. Grochow and **A. Allard**, Sci. Rep. 6, 31708 (2016)

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⋆ Featured in the *Editors' Suggestions* section of Phys. Rev. E.

[A17] *Complex networks as an emerging property of hierarchical preferential attachment*, L. Hébert-Dufresne, E. Laurence, **A. Allard**, J.-G. Young and L. J. Dubé, Phys. Rev. E 92, 062809 (2015)

[A16] *General and exact approach to percolation on random graphs*, **A. Allard**, L. Hébert-Dufresne, J.-G. Young and L. J. Dubé, Phys. Rev. E 92, 062807 (2015)

[A15] *A shadowing problem in the detection of overlapping communities: Lifting the resolution limit through a cascading procedure*, J.-G. Young, **A. Allard**, L. Hébert-Dufresne and L. J. Dubé, PLOS ONE 10, e0140133 (2015)

[A14] *Spreading dynamics on complex networks: a general stochastic approach*, P.-A. Noël, **A. Allard**, L. Hébert-Dufresne, V. Marceau and L. J. Dubé, J. Math. Biol. 69, 1627–1660 (2014)

[A13] *A system-level model for the microbial regulatory genome*, A. N. Brooks, D. J. Reiss, **A. Allard**, W.-J. Wu, D. M. Salvanha, C. L. Plaisier, S. Chandrasekaran, M. Pan, A. Kaur and N. S. Baliga, Mol. Syst. Biol. 10, 740 (2014)

[A12] *Coexistence of phases and the observability of random graphs*, **A. Allard**, L. Hébert-Dufresne, J.-G. Young and L. J. Dubé, Phys. Rev. E 89, 022801 (2014)
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[A11] *Percolation on random networks with arbitrary k-core structure*, L. Hébert-Dufresne†, **A. Allard**†, J.-G. Young and L. J. Dubé, Phys. Rev. E 88, 062820 (2013)

[A10] *Global efficiency of local immunization of complex networks*, L. Hébert-Dufresne†, **A. Allard**†, J.-G. Young† and L. J. Dubé, Sci. Rep. 3, 2171 (2013)

[A9] *Bond percolation on a class of correlated and clustered random graphs*, **A. Allard**, L. Hébert-Dufresne, P.-A. Noël, V. Marceau and L. J. Dubé, J. Phys. A 45, 405005 (2012)

[A8] *Exact solution of bond percolation on small arbitrary graphs*, **A. Allard**, L. Hébert-Dufresne, P.-A. Noël, V. Marceau and L. J. Dubé, EPL 98, 16001 (2012)

[A7] *Propagation on networks: An exact alternative perspective*, P.-A. Noël, **A. Allard**, L. Hébert-Dufresne, V. Marceau and L. J. Dubé, Phys. Rev. E 85, 031118 (2012)

[A6] *Structural preferential attachment: Stochastic process for the growth of scale-free, modular and self-similar systems*, L. Hébert-Dufresne, **A. Allard**, V. Marceau, P.-A. Noël and L. J. Dubé, Phys. Rev. E 85, 026108 (2012)

[A5] *Structural preferential attachment: Network organization beyond the link*, L. Hébert-Dufresne, **A. Allard**, V. Marceau, P.-A. Noël and L. J. Dubé, Phys. Rev. Lett. 107, 158702 (2011)

[A4] *Modeling the dynamical interaction between epidemics on overlay networks*, V. Marceau, P.-A. Noël, L. Hébert-Dufresne, **A. Allard** and L. J. Dubé, Phys. Rev. E 84, 026105 (2011)

[A3] *Propagation dynamics on networks featuring complex topologies*, L. Hébert-Dufresne, P.-A. Noël, V. Marceau, **A. Allard** and L. J. Dubé, Phys. Rev. E 82, 036115 (2010)

[A2] *Adaptive networks: Coevolution of disease and topology*, V. Marceau, P.-A. Noël, L. Hébert-Dufresne, **A. Allard** and L. J. Dubé, Phys. Rev. E 82, 036116 (2010)

[A1] *Heterogeneous bond percolation on multitype networks with an application to epidemic dynamics*, **A. Allard**, P.-A. Noël, L. J. Dubé and B. Pourbohloul, Phys. Rev. E 79, 036113 (2009)

Book chapters

[B2] *A new approach to international trade from Network Geometry: The World Trade Atlas 1870-2013*, G. García-Pérez, M. Boguñá, **A. Allard** and M. Á. Serrano, in *Networks of International Trade and Investment: Understanding globalization through the lens of network analysis*, S. Gorgoni, A. Amighini and M. Smith (Eds.), Vernon Press, pp. 71–112 (2018) ISBN:978-1-62273-065-0

[B1] *The Social Zombie: Modeling undead outbreaks on social networks*, L. Hébert-Dufresne, P.-A. Noël, V. Marceau, **A. Allard** and L. J. Dubé, in *Mathematical Modeling of Zombies*, R. Smith? (Ed.), University of Ottawa Press, pp. 149–170 (2014) ISBN:978-0-77662-210-1

Other writings

[O4] *The path of complexity*, L. Hébert-Dufresne, **A. Allard**, J. Garland, E. A. Hobson and L. Zaman, npj Complex. 1, 4 (2024)

[O3] *La modélisation mathématique pour cartographier le complexe et l'inconnu*[8], **A. Allard**, L. J. Dubé and L. Hébert-Dufresne, ACFAS Magazine (September 2020)

[O2] *COVID-19: Cancel your next large event, and tell your friends to cancel theirs*, G. St-Onge, V. Thibeault, **A. Allard**, L. J. Dubé and L. Hébert-Dufresne, `medium.com` (March 2020)

[O1] *Des ponts d'Euler à la grippe aviaire: De l'abstraction mathématique à la réalité sociale des épidémies*[9], **A. Allard**, P.-A. Noël and L. J. Dubé, Accromath 4 (winter-spring 2009)

Invited seminars and presentations

[I22] *Network geometry: bringing data back into the fold* (forthcoming), Network Geometry Satellite, International School and Conference on Network Science (Netsci2025), Maastricht, The Netherlands, 2025

[I21] *Simplicity meets complexity: Challenges in reproducing complex connectivity patterns with simple models*, KIAS-KU International Workshop on Theoretical Challenges in Network Science (TCNS2024), Seoul, Republic of Korea, 2024

[I20] *Modeling Complex and Interacting Contagions with Approximate Master Equations*, EPINEXT: Next-gen Methods for Data-Rich Epidemic Models satellite, Conference on Complex Systems (CCS2024), Exeter, United Kingdom, 2024

[I19] *Simplicity meets complexity: Reproducing complex connectivity patterns with simple models*, 2024 Erdős-Rényi Prize Lecture, International School and Conference on Network Science (Netsci2024), Québec, Canada, 2024

[I18] *Rethinking interactions among the constituents of complex systems: The case for latent hyperbolic geometry*, Vermont-KIAS Workshop: Group interactions in network science, Vermont Complex Systems Institute, University of Vermont, Burlington, USA, 2023

[I17] *Geometric description of clustering in directed networks*, Institute for Biocomputation and Physics of Complex Systems (BIFI), Universidad de Zaragoza, Zaragoza, Spain, 2023

[I16] *An introduction to the methodologies for studying complex networks*, BIOS^2/Sentinelle Nord Advanced Field School in Computational Ecology, Val Morin, Canada, 2023

[I15] *The role of directionality, heterogeneity & correlations in epidemic risk and spread*, Workshop on Interacting Contagions, Santa Fe Institute, Santa Fe NM, USA, 2023

[I14] *Dynamics on networks through the lens of spectral and information theories*, Institute of Complex Systems (UBICS), Universitat de Barcelona, Barcelona, Spain, 2022

[I13] *Graphe poissonnien, un oxymore?*, Centre Interdisciplinaire en Modélisation Mathématique de l'Université Laval (CIMMUL), Québec, Canada, 2022

[I12] *Contact Network Epidemiology: Heterogeneity and Stochasticity of Disease Spread*, Quantitative Life Sciences, McGill University, Montréal, Canada, 2022

[I11] *Deep learning of dynamical epidemic processes on complex networks*, Vermont Complex Systems Institute, University of Vermont, Burlington VT, USA, 2019

[I10] *Deep learning of dynamical epidemic processes on complex networks*, Institute of Complex Systems (UBICS), Universitat de Barcelona, Barcelona, Spain, 2019

[I9] *Chaire de recherche Sentinelle Nord en modélisation mathématique des systèmes et des réseaux complexes*, Official inauguration of the latest Sentinelle Nord research chairs, Lévis, Canada, 2019

[I8] *An introduction to the methodologies for studying complex networks*, Scientific retreat of the thematic project 1 (TP1) – Sentinelle Nord, Forêt Montmorency, Canada, 2019

[I7] *Three tales about percolation on real complex networks*, International Conference on Complex Networks (CompleNet 2019), Tarragona, Spain, 2019

[I6] *Modeling with Random Networks*, Complex Networks Winter Workshop (CNWW18), Québec, Canada, 2018

[I5] *Les réseaux complexes: un paradigme unificateur et transformateur pour comprendre la relation dynamique/structure des systèmes complexes*, Centre de recherche CERVO, Québec, Canada, 2018

[8] Mapping the complex and the unknown with mathematical modeling

[9] From Euler bridges to avian flu: From mathematical abstraction to the social reality of epidemics.

[I4] *Les réseaux complexes: un paradigme unificateur et transformateur pour comprendre la relation dynamique/structure des systèmes complexes*, Institut de biologie intégrative et des systèmes, Université Laval, Québec, Canada, 2018

[I3] *The hyperbolic brain: A geometric approach to network neuroscience*, Sentinelle Nord Annual Meeting, Québec, Canada, 2018

[I2] *Towards an effective structure of complex networks and its contributions to epidemiology and neuroscience*, Network Science Institute, Northeastern University, Boston, Massachusetts, USA, 2017

[I1] *Exploring the hidden metric space of complex networks*, Santa Fe Institute, Santa Fe, New Mexico, USA, 2015

Contributed presentations

[C15] *Realistic clustering patterns in directed geometric networks*, Networks 2021: A Joint Sunbelt and NetSci Conference, Washington DC, USA, 2021

[C14] *Effective structure of complex networks and a second look at message passing approaches* (poster), International School and Conference on Network Science (NetSci 2018), Paris, France, 2018

[C13] *Double epidemic threshold and the potential of the Zika virus as a sustained STI*, BIFI International Conference, Zaragoza, Spain, 2018

[C12] *The effective navigable geometry of the brain*, Mapping Complexity: Foundations and Applications of Network Geometry workshop (MACFANG-17), Barcelona, Spain, 2017

[C11] *The effective navigable geometry of the brain*, International School and Conference on Network Science (NetSci 2017), Indianapolis, Indiana, USA, 2017

[C10] *The geometric nature of weights in real complex networks*, Conference on Complex Systems (CCS 2016), Amsterdam, The Netherlands, 2016

[C9] *The hidden geometry of complex weighted networks*, 8th International Conference on Discrete Models of Complex Systems (Summer Solstice 2016), Aveiro, Portugal, 2016

[C8] *Unveiling the hidden geometry of weighted networks*, International School and Conference on Network Science (TOPONETS15), Zaragoza, Spain, 2015

[C7] *Percolation on clustered and correlated random graphs: General formalism and applications* (poster), International School and Conference on Network Science (NetSci 2013), Copenhagen, Denmark, 2013

[C6] *Bond and site percolation on clustered and correlated random graphs*, Joint CRM-Imperial College School and Workshop in Complex Systems, Barcelona, Spain, 2013

[C5] *Unveiling hidden communities through cascading detection on network structures*, 2nd International Conference on Complex Sciences, Santa Fe, New Mexico, USA, 2012

[C4] *Exact solution of bond percolation on small arbitrary graphs*, International School and Conference on Network Science (NetSci 2012), Evanston, Illinois, USA, 2012

[C3] *Using network organization to hinder propagation in structured populations* (poster), International School and Conference on Network Science (NetSci 2012), Evanston, Illinois, USA, 2012

[C2] *Multitype modular networks as a model of clustered social networks* (poster), International School and Conference on, Network Science (NetSci 2010), Boston & Cambridge, Massachusetts
USA, 2010

[C1] *Heterogeneous Bond Percolation on Complex Networks: Application to Epidemiology* (poster), Canadian Association of Physicists Congress, Québec, Canada, 2008
⋆ Third place at the student competition.

Presentations by mentees

[M47] *Functional connectivity alterations in neuronal networks derived from individuals with schizophrenia* (contributed talk), Zahra Yazdani Najafabadi, Network Neuroscience Satellite, International School and Conference on Network Science (Netsci2025), Maastricht, The Netherlands, 2025

[M46] *Functional connectivity alterations in neuronal networks derived from individuals with schizophrenia* (poster), Zahra Yazdani Najafabadi, International School and Conference on Network Science (Netsci2025), Maastricht, The Netherlands, 2025

[M45] *Koopman's approach to partial integration of the Kuramoto-Sakaguchi model on heterogeneous graphs* (contributed talk), Vincent Thibeault, SIAM Conference on Applications of Dynamical Systems (DS25), Denver, Colorado, USA, 2025

[M44] *Deciphering large-scale dynamics in complex networks through Koopman operator theory* (contributed talk), Benjamin Claveau, SIAM Conference on Applications of Dynamical Systems (DS25), Denver, Colorado, USA, 2025

[M43] *Extraction of structural properties based on graph theory during neurodevelopment of cultures neurons using machine learning and digital holographic microscopy* (contributed talk), Zahra Yazdani Najafabadi, SPIE Photonics West, San Francisco, California, USA, 2025

[M42] *Sampling of a random graph model with a fixed centrality measure* (inviter talk), François Thibault, CENTAI Institute, Turin, Italy, 2024

[M41] *A fresh look at the Kuramoto model on graphs: symmetries, integrals of motion, and motifs* (contributed talk), Vincent Thibeault, International School and Conference on Network Science (Netsci2024), Québec, Canada, 2024

[M40] *Unraveling neuronal network growth stages through graph fingerprints* (contributed talk), Zahra Yazdani Najafabadi, International School and Conference on Network Science (Netsci2024), Québec, Canada, 2024

[M39] *Uniform sampling of the Layered Configuration Model* (lightning talk), François Thibault, International School and Conference on Network Science (Netsci2024), Québec, Canada, 2024

[M38] *Symmetries as a guide for network hyperbolic embedding* (poster), Simon Lizotte, International School and Conference on Network Science (Netsci2024), Québec, Canada, 2024

[M37] *An approximate master equation based epidemic model with prophylactic measures and context-dependent behavior* (contributed talk), Olivier Ribordy, International School and Conference on Network Science (Netsci2024), Québec, Canada, 2024

[M36] *Hyperbolic Embeddings of Empirical Directed Networks* (poster), Jérémi Lesage, International School and Conference on Network Science (Netsci2024), Québec, Canada, 2024

[M35] *Exploring recurrent neural network dynamics: A spectral approach based on Koopman operator theory* (poster), Benjamin Claveau, International School and Conference on Network Science (Netsci2024), Québec, Canada, 2024

[M34] *Counting closed walks on trees and the spectrum of extremely sparse graphs* (contributed talk), Olivier Ribordy, Combinatorics 2024, Carovigno, Italy, 2024

[M33] *Counting closed walks on trees and the spectrum of extremely sparse graphs* (contributed talk), Olivier Ribordy, Graduate Student Combinatorics Conference (GSCC), Pittsburgh, Pennsylvania, USA, 2024

[M32] *The low-rank hypothesis of complex systems* (invited talk), Vincent Thibeault, Mathematical Institute, Oxford University, Oxford, United Kingdom, 2024

[M31] *The low-rank hypothesis of complex systems* (invited talk), Vincent Thibeault, Network Science Institute, Northeastern University, Boston, Massachusetts, USA, 2024

[M30] *A Probabilistic Methodology to Reconstruct Biodiversity from Interactions with Indicator Species Along Latitudinal Co-Occurrence Networks* (contributed talk), Ilhem Bouderbala, Sentinelle Nord Scientific Meeting, Québec, Canada, 2023

[M29] *La géométrie au coeur des systèmes nordiques* (contributed talk), Simon Lizotte, Sentinelle Nord Scientific Meeting, Québec, Canada, 2023

[M28] *On the reconstructability of complex networks* (poster), François Thibault, Sentinelle Nord Scientific Meeting, Québec, Canada, 2023

[M27] *On the reconstructability of complex networks* (contributed talk), François Thibault, International School and Conference on Network Science (Netsci2023), Vienna, Austria, 2023

[M26] *Inherent uncertainty of hyperbolic embeddings of complex networks* (contributed talk), Simon Lizotte, International School and Conference on Network Science (Netsci2023), Vienna, Austria, 2023

[M25] *Optimal Mesoscopic Structure of General Binary-State Dynamics on Networks* (contributed talk), Jérémi Lesage, International School and Conference on Network Science (Netsci2023), Vienna, Austria, 2023

[M24] *Extracting structural connectomes from living neurons in culture by combining digital holographic microscopy with deep-learning methods* (poster), Zahra Yazdani Najafabadi, 16th Canadian Neuroscience Meeting, Montréal, Canada 2023

[M23] *Inherent uncertainty of hyperbolic embeddings of complex networks* (invited talk), Simon Lizotte, New England Statistics Symposium (NESS2023), Boston MA, USA 2023

[M22] *The Low-Rank Hypothesis of Complex Systems: From Empirical and Theoretical Evidence to the Emergence of Higher-Order Interactions* (contributed talk), Vincent Thibeault, SIAM Conference on Applications of Dynamical Systems (DS23), Portland OR, USA, 2023

[M21] *On the effectiveness of reconstructing biodiversity from indicator species along a climate gradient* (poster), Ilhem Bouderbala, Sentinelle Nord Scientific Meeting, Québec, Canada, 2022

[M20] *Dimension matters when modeling network communities in hyperbolic spaces* (contributed talk), Béatrice Désy, International School and Conference on Network Science (Netsci2022), Shanghai, China, 2022

[M19] *Random graph models with fixed centrality patterns and degree sequence* (contributed talk), François Thibault, International School and Conference on Network Science (Netsci2022), Shanghai, China, 2022

[M18] *On the importance of correlation in graph reconstruction* (contributed talk), Simon Lizotte, International School and Conference on Network Science (Netsci2022), Shanghai, China, 2022

[M17] *Nonlinear infection rate to compress mechanistic epidemic models* (contributed talk), Guillaume St-Onge, Northeast Regional Conference on Complex Systems (NERCCS 2022), Buffalo NY, USA, 2022

[M16] *The low-dimension hypothesis implies higher-order interactions in complex systems* (contributed talk), Vincent Thibeault, Northeast Regional Conference on Complex Systems (NERCCS 2022), Buffalo NY, USA, 2022

[M15] *Dimension reduction on heterogeneous networks* (contributed talk), Marina Vegué Llorente, Networks 2021: A Joint Sunbelt and NetSci Conference, Washington DC, USA, 2021

[M14] *Information Theory of Dynamics on Networks: Between Predictability and Reconstructability* (contributed talk), Charles Murphy, Networks 2021: A Joint Sunbelt and NetSci Conference, Washington DC, USA, 2021

[M13] *Universal nonlinear infection kernel from heterogeneous exposure on higher-order networks* (contributed talk), Guillaume St-Onge, Networks 2021: A Joint Sunbelt and NetSci Conference, Washington DC, USA, 2021

[M12] *Dimension reduction of high-dimensional dynamics on networks with adaptation* (contributed talk), Vincent Thibeault, Networks 2021: A Joint Sunbelt and NetSci Conference, Washington DC, USA, 2021

[M11] *Firing rate distributions in plastic networks of spiking neurons* (contributed talk), Marina Vegué Llorente, Networks 2021: A Joint Sunbelt and NetSci Conference, Washington DC, USA, 2021

[M10] *Information Theory of Dynamics on Networks: Quantifying the Structure-Function Relationship* (contributed talk), Charles Murphy, SIAM Conference on Applications of Dynamical Systems (DS21)

[M9] *Bursty Exposure on Higher-Order Networks Leads to Nonlinear Infection Kernels* (contributed talk), Guillaume St-Onge, SIAM Conference on Applications of Dynamical Systems (DS21)

[M8] *Dimension Reduction of High-Dimensional Dynamics on Networks with Adaptation* (contributed talk), Vincent Thibeault, SIAM Conference on Applications of Dynamical Systems (DS21)

[M7] *Firing Rate Distributions in Plastic Networks of Spiking Neurons* (contributed talk), Marina Vegué Llorente, SIAM Conference on Applications of Dynamical Systems (DS21)

[M6] *Bursty exposure on higher-order networks leads to nonlinear infection kernels* (contributed talk), Guillaume St-Onge, Northeast Regional Conference on Complex Systems (NERCCS 2021)

[M5] *Dimension reduction of high-dimensional dynamics on networks with adaptation* (contributed talk), Vincent Thibeault, Northeast Regional Conference on Complex Systems (NERCCS 2021)

[M4] *Dimension reduction on heterogeneous networks* (contributed talk), Marina Vegué Llorente, Northeast Regional Conference on Complex Systems (NERCCS 2021)

[M3] *Deep learning of stochastic contagion dynamics on complex networks* (contributed talk), Charles Murphy, International School and Conference on Network Science (Netsci 2020), Rome, Italy (2020)

[M2] *Localization, bistability and optimal seeding of contagions on higher-order networks* (contributed talk), Guillaume St-Onge, Conference on Artificial Life (ALIFE 2020), Montréal, Canada (2020)

[M1] *Learning dynamical processes on complex networks from time series* (contributed talk), Charles Murphy, International School and Conference on Network Science (Netsci 2019), Burlington VT, États-Unis (2019)

Selected Media Coverage

- *Thinking globally for pandemic early warning systems*
  C. Raina MacIntyre, Nature Medicine, February 12th 2025
  https://www.nature.com/articles/s41591-024-03460-2
- *Validating the low-rank hypothesis in complex systems*
  Tejasri Gururaj, Phys.org, January 24th 2024
  https://phys.org/news/2024-01-validating-hypothesis-complex.html
- *Intrinsic simplicity of complex systems*
  Jianxi Gao, Nature Physics, January 10th 2024
  https://www.nature.com/articles/s41567-023-02268-0
- *Déconfinement : La chasse aux super-propagateurs du covid-19*
  Vincent Nouyrigat, Science & Vie, January 2021
  https://www.science-et-vie.com/corps-et-sante/deconfinement-la-chasse-aux-super-propagateurs-du-covid-19-2216.html

- *L'épidémiologie du temps des Fêtes*
  Alexandre Touchette, Les années lumière, November 22nd 2020
  https://ici.radio-canada.ca/ohdio/premiere/emissions/les-annees-lumiere/segments/reportage/210686/covid-19-noel-temps-des-fetes-super-propagation-virus-confinement
- *Covid-19 : comment certains malades deviennent des supercontaminateurs*
  Le Monde, August 15th 2020
  https://www.youtube.com/watch?v=_2MT1r-Cmsw
- *An Obscure Field of Math Might Help Unlock Mysteries of Human Perception*
  Stephen Ornes, Discover Magazine, July/August 2020
  https://www.discovermagazine.com/the-sciences/an-obscure-field-of-math-might-help-unlock-mysteries-of-human-perception
- *La pandémie s'alimente de hasard et de superdissémination*
  Jean Hamann, ULaval nouvelles, June 2nd 2020
  https://nouvelles.ulaval.ca/2020/06/02/la-pandemie-s-39-alimente-de-hasard-et-de-superdissemination-a:895b2a35-08a7-43d5-b686-9d0567f42a9b
- *Voir par-delà le sommet de la courbe*
  Alexis Riopel, Le Devoir, April 21st 2020
  https://www.ledevoir.com/societe/sante/577379/voir-par-dela-le-sommet-de-la-courbe
- *How large a gathering is too large during the coronavirus pandemic?*
  Dana Mackenzie, Science News, April 2nd 2020
  https://www.sciencenews.org/article/coronavirus-covid19-social-gathering-size-math-pandemic
- *Disease modelers gaze into their computers to see the future of Covid-19, and it isn't good*
  Sharon Begley, STAT News, February 14th 2020
  https://www.statnews.com/2020/02/14/disease-modelers-see-future-of-covid-19/
- *Hidden influence*
  Abigail Klopper, Nature Physics, February 3rd 2017
  https://www.nature.com/articles/nphys4046
- *Don't call in sick*
  Thilo Gross, Nature Physics, November 3rd 2016
  https://www.nature.com/articles/nphys3939
- *Going Home Sick? Your Substitute Could Spread Disease More Widely*
  Erin Blakemore, Smithsonian Magazine, August 2nd 2016
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