

Jonas L. Juul

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ACADEMIC EMPLOYMENT

- 2022 – 2024 **Technical University of Denmark, Lyngby, DK:** Carlsberg Fellow / Postdoc in Applied Mathematics and Computer Science with Sune Lehmann
- 2020 – 2022 **Cornell University, Ithaca, USA:** Postdoc in Applied Mathematics with Steven Strogatz (Mathematics), Austin Benson, and Jon Kleinberg (Computer Science)
- 04.2020 – 08.2020 **Technical University of Denmark, Lyngby, DK:** Postdoc in Applied Mathematics and Computer Science with Sune Lehmann
- 04.2020 – 08.2020 **Statens Serum Institut, Copenhagen, DK:** Member of the COVID-19 expert modeling group for the Danish CDC.

PROFESSIONAL PREPARATION

- 2019 **Cornell University, Ithaca, USA:** Visiting Scholar, Center for Applied Mathematics. Advisor: Steven Strogatz.
- 2015 – 2016 **Ludwig Maximilian Universität, Munich, DE:** Erasmus exchange student. Theoretical and Mathematical Physics.
- 2015 **Oxford University, Oxford, UK:** Academic visitor, Mathematical Institute. Advisor: Mason A. Porter
- 2014 **Weizmann Institute of Science, Rehovot, IL:** Summer research student. Department of Physics of Complex Systems. Advisor: Uzy Smilansky.
- 2011 – 2020 **Niels Bohr Institute, Copenhagen, DK:** BSc., Msc., and Ph.D. in Physics of Complex Systems. Advisors: Mogens H. Jensen and Joachim Mathiesen.

TEACHING EXPERIENCE

- 2021 **MATH 3230, Cornell University:** Teaching Introduction to Ordinary and Partial Differential Equations. 60 students.
- 2020 **MATH 3230, Cornell University:** Teaching Introduction to Ordinary and Partial Differential Equations. 45 students.
- 2016 **Assistant Lecturer, Niels Bohr Institute:** Linear Algebra and Classical Mechanics. Lectured, TA'ed, and remade every part of course with Prof. Jacob J. K. Kirkensgaard. Awarded highest mark by teaching committee.
- 2012 – 2019 **Teaching Assistant, Niels Bohr Institute:** 8 different courses in physics, mathematics, and mathematical methods.

COMMUNICATION AND LEADERSHIP TRAINING

- 2022 **Informations Debatakademi for naturvidenskab og teknologi:** 3-month course aimed at teaching young scientists to participate in public debate and communicate their research to the public. Information is a major Danish newspaper; instructors included prominent people from the Danish media landscape and experienced scientists with rich experience communicating to the public.
- 2021 **Cornell University Postdoc Leadership Development Program:** 1-semester program that introduced key concepts and skills of leadership in a complex environment.

ACADEMIC AWARDS

- 2022 **SIAM Network Science Best Contributed Talk:** Awarded for the talk “Harder, better, faster, stronger cascades – or simply larger?” at the SIAM Workshop on Network Science 2022.
- 2017 **Niels Bohr Institute JMK Teaching Award:** Prestigious award in competition with all lecturers. Nominated by students for remaking course on Linear Algebra and Classical Mechanics.

GRANTS

- 2021 **Carlsberg Foundation Reintegration Fellowship:** DKK 1,148,929 to fund continued research at DTU (2022-2024).
- 2015 – 2020 **Travel and Research Grants:** Awarded 12 different grants for academic travels and research projects.

PUBLICATIONS IN REFEREED JOURNALS

10. **J.L. Juul**, L. Alessandretti, J. Dammeyer, I. Zettler, S. Lehmann, J. Mathiesen, “Group-specific behavior change following terror attacks”, *Journal of Computational Social Science* (2022)
9. **J.L. Juul**, J. Ugander, “Comparing information diffusion mechanisms by matching on cascade size”, *Proceedings of the National Academy of Sciences (PNAS)*, Vol. 118, (46) (2021).
8. E. Landgren, **J.L. Juul**, S. Strogatz, “How a minority can win: Unrepresentative outcomes in a simple model of voter turnout”, *Phys. Rev. E* Vol. 104, 054307 (2021).
7. **J.S. Juul**, K. Græsbøll, L. E. Christiansen, S. Lehmann, “Fixed-time descriptive statistics underestimate extremes of epidemic curve ensembles”, *Nature Physics*, Vol. 17, 5–8
6. **J.S. Juul**, S.H. Strogatz, “Descendant distributions for the impact of mutant contagion on networks”, *Phys. Rev. Research*, Vol. 2, 033005
5. **J.S. Juul**, M.H. Jensen, S. Krishna, “Constraints on somite formation in developing embryos”, *J.R.Soc. Interface*, Vol. 16., (2019)
4. **J.S. Juul**, S. Krishna, M.H. Jensen, “Entrainment of oscillations as a means of controlling somite patterning in a model of coupled presomitic mesoderm cells”, *Phys. Rev. E*, Vol. 98, 062412
3. **J.S. Juul**, M. A. Porter, “Hipsters on Networks: How a Small Group of Individuals Can Lead to an Antiestablishment Majority”, *Phys. Rev. E*, Vol. 99, 022313
2. **J.S. Juul**, M.A. Porter, “Synergistic effects in threshold models on networks”, *Chaos*, Vol. 28, 013115 (2018)
1. **J.S. Juul**, C. H. Joyner, “Isospectral discrete and quantum graphs with the same flip counts and nodal counts”, *Journal of Physics A: Mathematical and Theoretical*, Vol. 51, 245101 (2018)

SUBMITTED MANUSCRIPTS AND PREPRINTS

- J.L. Juul**, A.R. Benson, J. Kleinberg, “Hypergraph patterns and collaboration structure”, *Status: Submitted*
- J.L. Juul**, S. Strogatz, “Comparing the efficiency of forward and backward contact tracing”, arXiv:2206.15080 *Status: Review and resubmit*, *Physical Review E*
- J.L. Juul**, K. Græsbøll, “Are fast test results preferable to high test sensitivity in contact-tracing strategies?” medRxiv preprint doi: <https://doi.org/10.1101/2021.02.17.21251921>, *Status: In review*

BOOK REVIEWS

1. S. Lehmann, **J.L. Juul**, “The Rules of Contagion: Why Things Spread – And Why They Stop”, *Math. Intelligencer*, (2021) <https://doi.org/10.1007/s00283-021-10107-4>.

REFEREEING

Nature, Science, Proceedings of the National Academy of Sciences, Nature Human Behaviour, Nature Communications, Scientific Reports, Network Science, Royal Society Open Science, Journal of Physics and Complexity, Europhysics Letters, Plos one, The International AAAI Conference on Web and Social Media, Sociological Methods and Research.

OTHER SERVICE

Organizing Committee, DataBeers CPH. Arranged social talks for data-interested professionals and students during 2022 and 2023.

Program Committee, NetSciX 2023. Read and evaluated several contributions to the annual network science conference.

Program Committee, IC2S2 2023. Read and evaluated several contributions to the annual computational social science conference.

Referee in the Cornell Mathematical Contest in Modeling 2021. Read and evaluated open-ended mathematical modeling projects.

Networks 2021 Satellite: DynaMo: Dynamics and motifs. Coorganized with Alice Schwarze (University of Washington) and Tim LaRock (Northeastern University). Accepted through competitive process.

INVITED TALKS

- 2022 **Indiana University Bloomington.** Oral presentation entitled “Harder, better, faster, stronger cascades – or simply larger?”. Work in collaboration with Johan Ugander (February).
- Harvard Business School.** Oral presentation entitled “Harder, better, faster, stronger cascades – or simply larger?”. Work in collaboration with Johan Ugander (February).
- 2020 **DTU Talk.** Short presentation about recent work on modeling COVID-19 spread in Denmark (joint with Sune Lehmann). Professional production (see link).
- DTU Corona Talks.** Talk about recent work on modeling COVID-19 spread in Denmark for the Danish CDC (joint with Sune Lehmann).
- 2019 **IT University of Copenhagen.** Gave a talk entitled “Descendant distributions for simple contagions on networks – How widespread will the next Spanish Flu get?” (September)
- Social Data Science seminar,** University of Copenhagen, Denmark. Gave a talk entitled “Descendant distributions for simple contagions on networks – How widespread will the next Spanish Flu get?” (September)
- University of California Los Angeles,** Network Meeting seminar entitled “Hipsters on Networks: How a Small Group of Individuals Can Lead to an Anti-Establishment Majority” (May)
- 2018 **Experimental Economics Meets Statistical Physics,** Workshop at the Niels Bohr Institute. Gave a talk entitled “Hipsters on Networks: How a Small Group of Individuals Can Lead to an Anti-Establishment Majority” (May)
- 2017 **Network Science Institute, Northeastern University,** Seminar entitled ‘Hipsters on Networks: How a Small Group of Individuals Can Lead to an Anti-Establishment Majority’ (November)
- Symposium on Theoretical Chronobiology** at Université des Sciences et Technologies de Lille, France. Gave a talk entitled "Waves, synchronisation and entrainment in populations of coupled somite precursor cells" (May).

- 2016 **Aspects of Gene and Cellular Regulation** Conference at The Institute of Mathematical Sciences in Chennai, India. I gave a talk on the topic entitled "The presomitic mesoderm: Minimal models and the consequences of period gradients". (August)
- 2014 **Analysis on Graphs and its Applications** Workshop at University College London, UK. I gave a talk on Flip counts and Nodal counts in graph theory. (December)

CONTRIBUTED TALKS AND POSTERS

- 2022 **TopoNets 2022** Conference on Complex Systems satellite. Gave a talk entitled "Hypergraph patterns and collaboration structure". Work in collaboration with Austin R. Benson and Jon Kleinberg. (October)
- Computational Social Science 2022** Conference on Complex Systems satellite. Oral presentation entitled "Harder, better, faster, stronger cascades – or simply larger?". Work in collaboration with Johan Ugander. (August)
- Contagion on Complex Social Systems** Workshop in Boulder, Colorado. Oral presentation entitled "Harder, better, faster, stronger cascades – or simply larger?". Work in collaboration with Johan Ugander. (August)
- 2021 **IC2S2** Oral presentation entitled "Harder, better, faster, stronger cascades – or simply larger?". Work in collaboration with Johan Ugander. (July)
- Networks 2021** Oral presentation entitled "Harder, better, faster, stronger cascades – or simply larger?". Work in collaboration with Johan Ugander. (July)
- GraphEx 2021** Poster entitled "Fixed-time statistics underestimate extremes of epidemic curve ensembles." accepted for presentation. Work in collaboration with Kaare Græsbøll, Lasse E. Christiansen, Sune Lehmann. (May). (September)
- 2020 **SINM 2020** NetSci satellite. Oral presentation entitled "Harder, better, faster, stronger cascades – or simply larger?". Work in collaboration with Johan Ugander. (September)
- 2019 **SIAM DS2019** Conference in Snowbird, Utah, USA. Gave a poster entitled "Hipsters on Networks: How a Small Group of Individuals Can Lead to an Anti-Establishment Majority". (May)
- 2017 **Physical Concepts in Stem Cell Biology** Workshop in Tisvildeleje, Denmark. Gave a talk entitled "Phase drift between stem cell oscillators scales mouse somites". (July)
- 2014 **Rhythms in Complex Systems: From Theory to Experiment** Conference at the Niels Bohr Institute. Gave a poster on Arnol'd tongues in somitogenesis. (August)

SELECTED PRESS

- 2022 **Youtuber Sabine Hossenfelder** (18/12/2022), Fake News, Echo Chambers & Polarization: How Bad Is Social Media?
- tjekdet.dk** (14/11/2022), For at begrænse spredning af usandheder, må vi bekæmpe vores trang til at klikke 'retweet'
- Videnskab.dk ForskerZonen** (27/10/2022), Misinformation: Du er måske en del af problemet – og sådan kan du blive løsningen.
- Videnskab.dk ForskerZonen** (14/04/2022), Nyt studie: Sådan skal fake news bekæmpes
- Medium** (04/06/2022), Fake News About our Fake News Study Spread Faster than its Truth... Just as We Predicted.
- The Atlantic** (03/26/2022), Sorry, I Lied About Fake News
- Science Magazine** (03/23/2022), Detecting Bullshit
- 2021 **Cornell Chronicle** (11/29/2021), Modeling suggests friendships may lead to lopsided elections
- Politiken** (11/20/2021), Nyt studie om fake news på Twitter: "Naar man ser resultatet, falder man lidt ned af stolen"

Cornell Chronicle (11/10/2021), Viral news – true and untrue – moves equally through Twitter

Stanford News (10/25/2021), The best way to counter fake news is to limit person-to-person spread, Stanford study finds

Synapsen. Ein Wissenschafts-Podcast von NDR Info (02/26/2021), Motivation für Coronamüde