JAN KORBEL

Researcher in sociophysics, statistical physics, complex systems, and econophysics

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WORKING EXPERIENCE

Postdoctoral researcher
Complexity Science Hub Vienna
Sep 2024 – Ongoing | Vienna, Austria

Postdoctoral researcher
Medical University of Vienna
Sep 2017 – Sep 2024 | Vienna, Austria

Postdoctoral researcher
Zhejiang University
Sep 2016 – May 2017 | Hangzhou, China

Doctoral intern
Max-Planck Institute for the history of science
Sep 2013 – Jun 2014 | Berlin, Germany

EDUCATION

Ph.D., Mathematical Engineering
Czech Technical University in Prague
Jul 2012 – May 2016 | Prague, Czechia

Bachelor's & master's degree , Mathematical Physics
Czech Technical University in Prague
Sep 2007 – Jun 2012 | Prague, Czechia

TEACHING

Technical University of Vienna
Introduction to financial networks
2023 – | Vienna, Austria

Medical University of Vienna
Basic Lecture
2020 – 2022 | Vienna, Austria

Czech Technical University in Prague
Quantum physics, Thermodynamics, Classical mechanics
2012 – 2016 | Prague, Czechia

GRANTS

Austrian Science Fund, PI
Thermodynamic costs of correlations in computing
2026 - 2029 | €480,000

Grant Agency of the Czech Republic,co-PI
Nonlinear interactions and information transfer in complex systems with extreme events
2019 - 2022 | €450,000

ACADEMIC OUTPUT

Publications
50 publications in PNAS, Nat. Com., PRL, New J. Phys., Sci. Rep., PRE, FCAA, and others.

Citations
∼**880** citations in Web of Science.

Peer review
∼**250** reviews of academic papers.

Conference talks
∼**40** conference and workshop talks.

Event organization
co-organized ∼**15** workshops, including a virtual annual workshop on stochastic thermodynamics (WOST) with ∼**900** registered participants.

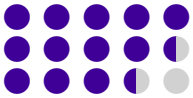
Awards
2019 Best paper award
- Journal *Mathematics*
2023 Dora Brücke-Teleky award
- For the best paper written by a post-doc at *MedUni Wien*
2026 Best oral presentation
- Conference *Entropy 2026*
2026 Vienna City Förderpreis
- STEM category

RESEARCH INTERESTS

Complex Systems
Sociophysics
Social Polarization
Statistical Physics
Stochastic Thermodynamics
Thermodynamics of Computation
Econophysics

LANGUAGES

Czech
English
German



10 MOST IMPORTANT PUBLICATIONS

Journal Articles

[1] J. Korbel, R. Dahdoul, and S. Thurner, "Empirical validation of the polarization transition in a double-random field model of elections," *Physical Review Letters*, vol. 136, p. 127 402, 12 2026. DOI: 10.1103/9gjj-1df6.

[2] J. Korbel, S. Havlin, and S. Thurner, "Microscopic origin of abrupt mixed-order phase transitions," *Nature Communications*, vol. 16, no. 1, p. 2628, 2025. DOI: 10.1038/s41467-025-57007-1.

[3] S. Thurner, M. Hofer, and J. Korbel, "Why more social interactions lead to more polarization in societies," *PNAS*, vol. 122, no. 44, e2517530122, 2025. DOI: 10.1073/pnas.2517530122.

[4] D. H. Wolpert, J. Korbel, C. W. Lynn, *et al.*, "Is stochastic thermodynamics the key to understanding the energy costs of computation?" *PNAS*, vol. 121, no. 45, e2321112121, 2024. DOI: 10.1073/pnas.2321112121.

[5] J. Korbel, S. D. Lindner, T. M. Pham, R. Hanel, and S. Thurner, "Homophily-based social group formation in a spin glass self-assembly framework," *Physical Review Letters*, vol. 130, p. 057 401, 5 2023. DOI: 10 . 1103 / PhysRevLett . 130 . 057401.

[6] T. M. Pham, J. Korbel, R. Hanel, and S. Thurner, "Empirical social triad statistics can be explained with dyadic homophylic interactions," *PNAS*, vol. 119, no. 6, e2121103119, 2022. DOI: 10.1073/pnas.2121103119.

[7] J. Korbel, S. D. Lindner, R. Hanel, and S. Thurner, "Thermodynamics of structure-forming systems," *Nature Communications*, vol. 12, no. 1, p. 1127, 2021. DOI: 10.1038/s41467-021-21272-7.

[8] T. M. Pham, A. C. Alexander, J. Korbel, R. Hanel, and S. Thurner, "Balance and fragmentation in societies with homophily and social balance," *Scientific Reports*, vol. 11, no. 1, p. 17 188, 2021. DOI: 10.1038/s41598-021-96065-5.

[9] P. Jizba and J. Korbel, "Maximum entropy principle in statistical inference: Case for non-shannonian entropies," *Physical Review Letters*, vol. 122, p. 120 601, 12 Mar. 2019. DOI: 10.1103/PhysRevLett.122.120601.

[10] J. Korbel and Y. Luchko, "Modeling of financial processes with a space-time fractional diffusion equation of varying order," *Fractional Calculus and Applied Analysis*, vol. 19, no. 6, pp. 1414–1433, 2016. DOI: doi:10.1515/fca-2016-0073.