JAN KORBEL

Researcher in statistical physics, complex systems, and econophysics

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WORKING EXPERIENCE

Postdoctoral researcher
Complexity Science Hub Vienna
Sep 2017 – 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

Research intern
Watson Research Centre, IBM
Dec 2012 – Aug 2016 · Prague, Czechia

EDUCATION

Ph.D. degree, 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, Czech Republic

ACADEMIC STATS

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

Citations
∼**620** citations in Web of Science.

Peer review
∼**200** reviews of academic papers.

Conference talks
∼**50** 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 MDPI Mathematics Best paper award (received for review paper [5]).
2023 Dora Brücke-Teleky award - Best paper written by a postdoc at MedUni Wien (received for paper [1]).

RESEARCH INTERESTS

Statistical Physics
Generalized entropies · Stochastic thermodynamics · Maximum entropy principle · Structure-forming systems

Complex systems
Complex networks · Opinion dynamics · Information theory · Collapse prediction

Econophysics
Option pricing · Fractional diffusion · Transfer entropy · Multifractal time series

LANGUAGES

Czech
English
German

10 MOST IMPORTANT PUBLICATIONS

Journal Articles

[1] 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*** *(editors' suggestion)*, vol. 130, p. 057 401, 5 Jan. 2023.

[2] T. M. Pham, J. Korbel, R. Hanel, and S. Thurner, "Empirical social triad statistics can be explained with dyadic homophylic interactions," ***Proceedings of the National Academy of Sciences***, vol. 119, no. 6, e2121103119, 2022.

[3] J. Korbel, S. D. Lindner, R. Hanel, and S. Thurner, "Thermodynamics of structure-forming systems," ***Nature Communications***, vol. 12, p. 1127, 2021.

[4] J. Korbel and D. H. Wolpert, "Stochastic thermodynamics and fluctuation theorems for non-linear systems," ***New Journal of Physics***, vol. 23, no. 3, p. 033 049, 2021.

[5] J.-P. Aguilar, J. Korbel, and Y. Luchko, "Applications of the fractional diffusion equation to option pricing and risk calculations," ***Mathematics***, vol. 7, no. 9, p. 796, 2019.

[6] 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 2019.

[7] J. Korbel, R. Hanel, and S. Thurner, "Classification of complex systems by their sample-space scaling exponents," ***New Journal of Physics***, vol. 20, no. 9, p. 093 007, 2018.

[8] H. Kleinert and J. Korbel, "Option pricing beyond black–scholes based on double-fractional diffusion," ***Physica A***, vol. 449, pp. 200–214, 2016.

[9] 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.

[10] P. Jizba and J. Korbel, "Multifractal diffusion entropy analysis: Optimal bin width of probability histograms," ***Physica A***, vol. 413, pp. 438–458, 2014.