

# JAN KORBEL

Researcher in statistical physics, complex systems, and econophysics

@ jan.korbel@meduniwien.ac.at

Vienna, Austria

@Jan\_Korbel

0000-0002-5371-5320

https://www.linkedin.com/in/jan-korbel-5446a066/

https://publons.com/researcher/1294887/jan-korbel/



## EXPERIENCE

Postdoctoral researcher

Medical University of Vienna & Complexity Science Hub Vienna

Sep 2017 – Ongoing

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

Intern

IT department, Quirin Bank

May 2012 – Jun 2013

Berlin, Germany

## EDUCATION

Ph.D., Mathematical Engineering

Czech Technical University in Prague

Jul 2012 – May 2016

Prague, Czechia

Ing. ( $\equiv$  MSc.), Mathematical Physics, with honors

Czech Technical University in Prague

Sep 2010 – Jun 2012

Prague, Czechia

Bc. ( $\equiv$  MSc.), Mathematical Physics

Czech Technical University in Prague

Sep 2007 – Aug 2010

Prague, Czechia

## ACADEMIC STATS

**Publications**

37 publications in PNAS, Nat. Com., PRL, New J. Phys., Sci. Rep., PRE, Physica A, FCAA and others.

**Citations**

~360 citations in Web of Science.

**Peer review**

~140 reviews of academic papers.

**Conference talks**

~30 conference talks and workshops.

**Event organization**

co-organized ~10 workshops, including virtual annual workshop on stochastic thermodynamics (WOST) with ~900 registered participants.

**Awards**

2019 MDPI Mathematics Best paper award.

## 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

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## Journal Articles

- T. M. Pham, J. Korbelt, 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.
- J. Korbelt, S. D. Lindner, R. Hanel, and S. Thurner, "Thermodynamics of structure-forming systems," *Nature Communications*, vol. 12, p. 1127, 2021.
- J. Korbelt 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.
- T. M. Pham, A. C. Alexander, J. Korbelt, R. Hanel, and S. Thurner, "Balance and fragmentation in societies with homophily and social balance," *Scientific Reports*, vol. 11, p. 17 188, 2021.
- J.-P. Aguilar, J. Korbelt, and Y. Luchko, "Applications of the fractional diffusion equation to option pricing and risk calculations," *Mathematics*, vol. 7, no. 9, p. 796, 2019.
- P. Jizba and J. Korbelt, "Maximum entropy principle in statistical inference: Case for non-shannonian entropies," *Physical Review Letters*, vol. 122, p. 120 601, 12 2019.
- J. Korbelt, 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.
- H. Kleinert and J. Korbelt, "Option pricing beyond black-scholes based on double-fractional diffusion," *Physica A*, vol. 449, pp. 200–214, 2016.
- J. Korbelt 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.
- P. Jizba and J. Korbelt, "Multifractal diffusion entropy analysis: Optimal bin width of probability histograms," *Physica A*, vol. 413, pp. 438–458, 2014.