Deniz Eroglu

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Kadir Has University
Department of Bioinformatics & Genetics
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EDUCATION

PhD, Theoretical Physics (with summa cum laude)
Humboldt University, Berlin (Germany), Department of Physics 2016

MSc, Mathematical Physics
Ege University(Turkey), Faculty of Science 2013

Bachelor of Science, Physics
Umea University (Sweden), Faculty of Science Erasmus Student 2008-2009

Bachelor of Science, Physics
Ege University (Turkey), Faculty of Science 2010

COMPUTER SKILLS

Operating Systems
Mac OS X, Linux: A thorough knowledge, UNIX, Windows: Experienced.
Programming
Able to program in Python, C/C++, R (for statistical computing) and Fortran.
Softwares
Good knowledge of Mathematica, Matlab and Grace.
Typesetting
Good knowledge of LaTeX.

LANGUAGES

Turkish (Native)
English (Fluent)

EXPERIENCES

Faculty Position

- "Assistant Professor", Department of Bioinformatics & Genetics, Kadir Has University, 1 February 2019 – ongoing.

Researcher Position

- "The Motter Group", Department of Physics & Astronomy, Northwestern University, 1 September 2017 – January 2019.
- "Nonlinear Dynamics Group", Department of Physics, Humboldt University Berlin, 1 April 2017 – 31 August 2017.
- Postdoctoral Researcher Position in a Joint Project:
  - "Department of Mathematics", Imperial College London, 22 June 2016 – 31 March 2017.
  - "University of São Paulo and ", Department of Mathematics, University of São Paulo, 1 April 2016 – 22 June 2016.
- "RD IV: Transdisciplinary Concepts and Methods", Potsdam Institute for Climate Impact Research, 09 May 2013 – 31 March 2016.

Visiting Stay

- "School of Maths and Statistics" University of Western Australia, 6 January – 5 March 2015.
- "Networks and Complexity Group", Department of Mathematics, Imperial College London, 15 September – 17 October 2012.

SCHOLARS

- Finite Earth Initiative - *"Self-Organized Diversity to Address Energy, Eco-Stability, and Consensus Challenges"*, Northwestern University, 2017-ongoing.
- Advanced Research Projects Agency - Energy *"Network Optimized Distributed Energy Systems (NODES) DE-FOA-001289"*, Northwestern University, 2017-ongoing
- Serrapilheira Project - *"Reconstructing the Dynamics of Complex Networks from Data"*, University of São Paulo, 2017-ongoing.
- German-Israeli Foundation for Scientific Research and Development project *"Pathogenesis of neural mechanisms associated with the freezing of gait phenomenon in Parkinson's disease"*, Humboldt University Berlin, 2017
- EU Marie-Curie IRSES project *"BREUDS (Brazilian European partnership in Dynamical Systems)"*, Imperial College London, 2016-2017
- CNPq project on *"Bifurcations and Control of Random Dynamical Systems"*, University of São Paulo, 2016-2017
- Leibniz Association project on *"Gradual environmental change versus single catastrophe - Identifying drivers of mammalian evolution"*, SAW-2013-IZW-2, Potsdam Institute for Climate Impact Research, 2013-2016
- TUBITAK project on *"Synchronisation of Prey-Predator Dynamics on Coupled Habitats"* Ege University, 2012-2013.

TEACHING EXPERIENCES

- 2012-2013 Lecture assistant at Ege University on "Physical Mathematics"
- 2015 Short course at University of Western Australia on "Collective Motion on Complex Networks"
- 2015 Full course for a small group of climatologists at Potsdam Institute for Climate Impact Research on "Calculus"
- 2016 Short course at University of São Paulo on "Computational Study of Structure, Dynamics and Functions of Complex Networks."
- 2016 Reading group at University of São Paulo on "Random Graphs"

- 2017 Reading group at Imperial College London on "Transfer Operators"
- 2017 Short course at Humboldt University Berlin on "Synchronization of Chaos"
- 2017 Summer School at Nesin Math Village on "Nonlinear Dynamics and Synchronization" (with a great success)

AWARDS

- The best PhD thesis Prize 2016 given by the Friends of PIK (Potsdam Institute for Climate Impact Research)

PUBLICATIONS

Thesis:

- *"Entrapping hidden changes in nature"* – with *Summa cum laude*
  PhD thesis, 2016
  Advisor :
  Jürgen Kurths, Humboldt University, Berlin, Germany
- *"Colletive Behavior in Complex Networks of Heterogeneous Oscillators."*
  MSc thesis, 2013
  Advisor(s) :
  G. Baris Bagci, Ege University, Izmir, Turkey
  Henrik J. Jensen, Imperial College, London, United Kingdom
- *"Non-additive Thermostatistics of Noise driven Van der Pol Oscillator."*
  BSc thesis, 2010
  Advisor :
  G. Baris Bagci, Ege University, Izmir, Turkey

Book chapters:

- *"Regime change detection in irregularly sampled time series"*
  Norbert Marwan, Deniz Eroglu, Ibrahim Ozken, Thomas Stemler, Karl-Heinz Wyrwoll & Jürgen Kurths
  Advances in Nonlinear Geosciences, Springer (2018)

Papers:

1. *"Reconstruction of Complex Networks Dynamics from Data"*
   Deniz Eroglu, Matteo Tanzi, Sebastian van Strien & Tiago Pereira (submitted)
2. *"Multifaceted Complexity of Janus Phase-Phase Oscillator Networks"*
   Zachary G. Nicolaou, Deniz Eroglu & Adilson E. Motter
   Phys. Rev. X 9, 011017 (2019) – Featured in Physics (Synopsis Paper)
3. *"Nonlinear time series analysis of irregularly sampled data"*
   Ibrahim Ozken, Deniz Eroglu, Sebastian F.M. Breitenbach, Norbert Marwan, Liangcheng Tan, Ugur Tirnakli & Jürgen Kurths
   Phys. Rev. E 98, 052215 (2018)
4. *"Prediction of flow dynamics using point processes"*
   Yoshito Hirata, Thomas Stemler, Deniz Eroglu & Norbert Marwan
   Chaos 28, 011101 (2018) – Editor's pick
5. *"Multiplex Recurrence Networks"*
   Deniz Eroglu, Norbert Marwan, Martina Stebich & Jürgen Kurths
   Phys. Rev. E 97, 012312 (2018)

6. *"Climatic and in-cave influences on $\delta^{18}O$ and $\delta^{13}C$ in a stalagmite from northeastern India through the last deglaciation"*
   Franziska A. Lechleitner, Sebastian F.M. Breitenbach, Hai Cheng, Birgit Plessen, Kira Rehfeld, Bedartha Goswami, Norbert Marwan, Deniz Eroglu, Jess Adkins & Gerald Haug
   Quaternary Research, 1-14, (2017)
7. *"Synchronisation of chaos and its applications"*
   Deniz Eroglu, Jeroen Lamb & Tiago Pereira
   Contemporary Physics, 58:3, 207-243 (2017)
8. *"See–saw relationship of the Holocene East Asian – Australian summer monsoon"*
   Deniz Eroglu, Fiona H. McRobie, Ibrahim Ozken, Thomas Stemler, Karl-Heinz Wyrwoll, Sebastian F. M. Breitenbach, Norbert Marwan & Jürgen Kurths
   Nature Communications 7, 12929, (2016)
9. *"Tweaking synchronization by connectivity modifications"*
   Paul Schultz, Thomas Peron, Deniz Eroglu, Thomas Stemler, G. Marcelo Ramírez Ávila, Francisco A. Rodrigues & Jürgen Kurths
   Phys. Rev. E 062211 (2016)
10. *"Scaling behaviour for recurrence based measures at the edge of chaos"*
    Ozgur Afsar, Deniz Eroglu, Norbert Marwan & Jürgen Kurths
    EPL, 112 10005 (2015)
11. *"Transformation-cost time-series method for analyzing irregularly sampled data"*
    Ibrahim Ozken, Deniz Eroglu, Thomas Stemler, Norbert Marwan, G. Baris Bagci & Jürgen Kurths
    Phys. Rev. E 91, 062911, (2015)
12. *"Finding recurrence networks' threshold adaptively for a specific time series"*
    Deniz Eroglu, Norbert Marwan, Sushma Prasad & Jürgen Kurths
    Nonlinear Processes in Geophysics 21 1085-1092 (2014)
13. *"Entropy of weighted recurrence plots"*
    Deniz Eroglu, Thomas K. DM. Peron, Nobert Marwan, Francisco A. Rodrigues, Luciano da F. Costa, Michael Sebek, István Z. Kiss, & Jürgen Kurths
    Phys. Rev. E 90 042919 (2014)
14. *"System Size driven Coherence in Complex Networks"*
    T. Pereira, D. Eroglu, B. Bagci, U. Tirnakli and H. J. Jensen
    Phys. Rev. Lett. 110, 234103 (2013)
15. *"q-thermostatistics of noise-driven Van der Pol oscillator"*
    Deniz Eroglu, Meltem Ozkan, G. Baris Bagci
    Physica A 390 1417-1423 (2011)

REFERENCES

- *Prof. Dr. Dr. h.c. mult. Jürgen Kurths* (PhD Advisor)
  Humboldt-Universität zu Berlin
  (Head of Nonlinear Dynamics' group)
  Potsdam Institute for Climate Impact Research
  (Head of Research Domain – Transdisciplinary Concepts and Methods)
  Telegrafenberg A31, 14473 Potsdam, Germany
  Email: kurths@pik-potsdam.de

- *Prof. Dr. Jeroen Lamb*
  Department of Mathematics
  (Head of DynamIC group)
  Imperial College London, London SW7 2AZ, UK
  Office: 638 Huxley Building

Email: jeroen.lamb@imperial.ac.uk

- *Prof. Dr. Ugur Tirnakli*
  Ege University, Faculty of Science, Department of Physics
  (Head of Statistical Physics and Nonlinear Dynamics Research Group)
  35100 Bornova Izmir, Turkey
  Email: ugur.tirnakli@ege.edu.tr