
CURRICULUM VITAE

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Consiglio Nazionale delle Ricerche (CNR)
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Education and Positions

1993 - 1998	Study of Physics, University of Bonn, Germany
1996 / 1997	Study of Physics, University of Edinburgh, Great Britain
1999	Diploma degree in Physics, University of Bonn, Germany
2003	PhD degree in Physics, University of Wuppertal, Germany
2004	Post-Doc position, Research Centre Juelich, Germany
2005 - 2006	Intra-European Marie Curie Fellowship, CNR, Florence, Italy
2007 - 2009	Outgoing Marie Curie Fellowship I, University of California, San Diego, USA
2009 - 2010	Outgoing Marie Curie Fellowship II, CNR, Florence, Italy
2010 -	Primo Ricercatore (Senior Researcher, equivalent to Associate professor) CNR, Florence, Italy

Research interests

- Univariate time series analysis: Symbolic dynamics, Entropies, Mutual information with time lag, Algorithmic complexity, Surrogate analysis
- Bivariate time series analysis: Cross correlation, Mutual information, Transfer entropy, Phase synchronization (Hilbert transform, wavelet transform), Nonlinear interdependences, Event synchronization
- Application to nonlinear model systems: Coupling and synchronization
- Application to Epilepsy: EEG analysis, Focus localization, Seizure prediction
- Statistical Validation of seizure predictions, Measure profile surrogates

- Spike train analysis: Spike train synchrony (single neurons, populations), Spike train distances, Reliability
- ISI-distance, SPIKE-distance, SPIKE-Synchronization
- Neuronal dynamics: Spiking neuron models, Neuronal network dynamics, Neuronal coding

Publications

Journal articles

1. Mulansky M, Bozanic N, Sburlea A, Kreuz T:
A guide to time-resolved and parameter-free measures of spike train synchrony.
Submitted to IEEE and the arXiv (2015).
2. Kreuz T, Mulansky M, Bozanic N:
SPIKY: A graphical user interface for monitoring spike train synchrony.
Submitted to JNeurophysiol and the arXiv (2015).
3. Bozanic N, Mulansky M, Kreuz T:
SPIKY
Scholarpedia 9(12), 32344 (2014).
4. Andrzejak RG, Mormann F, Kreuz T:
Detecting determinism from point processes.
Physical Review E 90, 062906 (2014).
5. Kreuz T, Chicharro D, Houghton C, Andrzejak RG, Mormann F:
Monitoring spike train synchrony.
J Neurophysiol 109, 1457 (2013).
6. Kreuz T:
SPIKE-distance.
Scholarpedia 7(12), 30652 (2012).
7. Houghton C, Kreuz T:
On the efficient calculation of van Rossum distances.
Network: Computation in neural systems 23, 48 (2012).
8. Kreuz T, Chicharro D, Greschner M, Andrzejak RG:
Time-resolved and time-scale adaptive measures of spike train synchrony.
J Neurosci Methods 195, 92 (2011).
9. Andrzejak RG, Kreuz T:
Characterizing unidirectional couplings between point processes and flows.
Eur Phys Lett 96, 50012 (2011).
10. Chicharro D, Kreuz T, Andrzejak RG:
What can spike train distances tell us about the neural code?
J Neurosci Methods 199, 146 (2011).

11. Kreuz T:
Measures of neuronal signal synchrony.
Scholarpedia 6(12), 11922 (2011).
12. Kreuz T:
Measures of spike train synchrony.
Scholarpedia 6(10), 11934 (2011).
13. Haas JS*, Kreuz T*, Torcini A, Politi A, Abarbanel HDI:
Rate maintenance and resonance in the entorhinal cortex.
European Journal of Neuroscience 32, 1930 (2010).
14. Kreuz T, Chicharro D, Andrzejak RG, Haas JS, Abarbanel HDI:
Measuring multiple spike train synchrony.
J Neurosci Methods 183, 287 (2009).
15. Kreuz T, Mormann F, Andrzejak RG, Kraskov A, Lehnertz K, Grassberger P:
Measuring synchronization in coupled model systems: A comparison of different approaches.
Phys D 225, 29 (2007).
16. Torcini A, Kreuz T, Luccioli S:
Coherent Response of the Hodgkin-Huxley neuron in the high input regime.
Neurocomputing 70, 1943 (2007).
17. Kreuz T, Luccioli S, Torcini A:
Coherence Resonance due to correlated noise in neuronal models.
Neurocomputing 70, 1970 (2007).
18. Kreuz T, Haas JS, Morelli A, Abarbanel HDI, Politi A:
Measuring spike train synchrony.
J Neurosci Methods 165, 151 (2007).
19. Andrzejak RG, Mormann F, Widman G, Kreuz T, Elger CE, Lehnertz K:
Improved spatial characterization of the epileptic brain by focusing on nonlinearity.
Epilepsy Research 69, 30 (2006).
20. Luccioli S, Kreuz T, Torcini A:
Dynamical response of the Hodgkin-Huxley model in the high-input regime.
Phys. Rev. E 73, 041902 (2006).
21. Kreuz T, Luccioli S, Torcini A:
Double coherence resonance in neuron models driven by discrete correlated noise.
Phys. Rev. Lett. 97, 238101 (2006).
22. Mormann F, Kreuz T, Rieke C, Andrzejak RG, Kraskov A, David P, Elger CE, Lehnertz K:
On the predictability of epileptic seizures.
Clin. Neurophysiol. 116, 569 (2005).
23. Kraskov A, Kreuz T, Andrzejak RG, Stögbauer H, Nadler W, Grassberger P:
Extracting phases from aperiodic signals.
arXiv:cond-mat/0409382.
24. Kreuz T, Andrzejak RG, Mormann F, Kraskov A, Stögbauer H, Elger CE, Lehnertz K,
Grassberger P:

Measure profile surrogates: A method to validate the performance of epileptic seizure prediction algorithms.

Phys. Rev. E 69, 061915 (2004).

25. Andrzejak RG, Mormann F, Kreuz T, Rieke C, Kraskov A, Elger CE, Lehnertz K: Testing the null hypothesis of the non-existence of a pre-seizure state. Phys. Rev. E 67, 010901 (2003).
26. Lehnertz K, Mormann F, Kreuz T, Andrzejak RG, Rieke C, David P, Elger CE: Seizure prediction by nonlinear EEG analysis. IEEE Trans. Biomed. Eng. (Special Issue), 22 (1), 57 (2003).
27. Mormann F, Andrzejak RG, Kreuz T, Rieke C, David P, Elger CE, Lehnertz K: Automated detection of a pre-seizure state based on a decrease in synchronization in intracranial EEG recordings from epilepsy patients. Phys. Rev. E 67, 021912 (2003).
28. Mormann F, Kreuz T, Andrzejak RG, David P, Lehnertz K, Elger CE: Epileptic seizures are preceded by a decrease in synchronization. Epilepsy Res. 53, 171 (2003).
29. Rieke C, Mormann F, Andrzejak RG, Kreuz T, David P, Elger CE, Lehnertz K: Discerning nonstationarity from nonlinearity in seizure-free and pre-seizure EEG recordings from epilepsy patients. IEEE Trans. Biomed. Eng. 50, 634 (2003).
30. Quian Quiroga R, Kraskov A, Kreuz T, and Grassberger P: Reply to "Comment on 'Performance of different synchronization measures in real data: A case study on electroencephalographic signals.'". Phys. Rev. E 67, 063902 (2003).
31. Andrzejak RG, Kraskov A, Stögbauer H, Mormann F, Kreuz T: On the necessity, strengths and caveats of bivariate surrogate techniques. Phys. Rev. E 68, 066202 (2003).
32. Quian Quiroga R, Kraskov A, Kreuz T, and Grassberger P: Performance of different synchronization measures in real data: A case study on electroencephalographic signals. Phys. Rev. E, 65, 041903 (2002).
33. Quian Quiroga R, Kreuz T, and Grassberger P: Event Synchronization: A simple and fast method to measure synchronicity and time delay patterns. Phys.Rev. E, 66, 041904 (2002).
34. Lehnertz K, Andrzejak RG, Arnhold J, Kreuz T, Mormann F, Rieke C, Widman G, Elger CE: Nonlinear EEG analysis in epilepsy: Its possible use for interictal focus localization, seizure anticipation, and prevention. J. Clin. Neurophysiol. 18, 209-222 (2001).

Book chapters

35. Kreuz T:
Synchronization measures.
In: R. Quian Quiroga, S. Panzeri (ed.) Principles of neural coding. CRC Taylor and Francis, Boca Raton, FL, USA. Pages 97-119 (2013).
36. Houghton C, Kreuz T:
Measures of spike train synchrony: From single neurons to populations.
In: H. Schuster, M. Pesenson (ed.) Multiscale Analysis and Nonlinear Dynamics: from Molecules to the Brain.
Wiley, Weinheim, Germany. Pages 277-298 (2013).
37. Andrzejak RG, Kreuz T, Mormann F, Lehnertz K and Elger CE:
Surrogate time series improve the capability of nonlinear measures to characterize the epileptic process.
In: Klonowski (ed.) Simplicity behind complexity. Pabst Science Publishers, Berlin, 360-366 (2004).
38. Lehnertz K, Andrzejak RG, Kreuz T, Mormann F, Rieke C, David P, Elger CE:
Analysis of EEG data in epilepsy.
In: Nardulli G & Stramaglia S: Modelling biomedical signals. World Scientific, Singapore (2002).
39. Elger CE, Mormann F, Kreuz T, Andrzejak RG, Rieke C, Sowa R, Florin S, David P, Lehnertz K:
Characterizing the spatio-temporal dynamics of the epileptogenic process with nonlinear EEG analysis.
In: R. Tetzlaff (Hrsg.) Proceedings of the 7th IEEE International Workshop on Cellular Neural Networks and Their Applications. World Scientific, Singapore, 228-242 (2002).

Selected Abstracts and Conference Contributions

40. Kreuz T, Bozanic N, Mulansky M:
SPIKE-Synchronization: A parameter-free and time-resolved coincidence detector with an intuitive multivariate extension.
CNS Conference, Prague, Tschechia (2015).
41. Kreuz T, Bozanic N:
SPIKY: A graphical user interface for tracking spike train similarity.
CNS Conference, Quebec City, Canada: BMC Neuroscience 15(1), P201 (2014).
42. Kreuz T, Bozanic N:
Monitoring spike train synchrony: SPIKY A graphical user interface.
SfN Meeting Program No. 680.5, San Diego, Ca, USA (2013).
43. Kreuz T, Bozanic N:
Using spike train distances to identify the most discriminative neuronal subpopulation.
CNS Conference, Paris, France: BMC Neuroscience 14, P35 (2013).

44. Kreuz T, Chicharro D, Andrzejak RG:
Measuring real-time synchronization in both spike trains and continuous time series.
CNS Conference, Stockholm, Sweden: BMC Neuroscience 12, P3 (2011).
45. Kreuz T, Chicharro D, Andrzejak RG:
Time-resolved and time-scale adaptive measures of spike train synchrony.
SfN Meeting Program No. 616.6, San Diego, Ca, USA (2010).
46. Kreuz T, Chicharro D, Andrzejak RG:
Measuring spike train synchrony between neuronal populations.
SfN Meeting Program No. 789.5, Chicago, Il, USA (2009).
47. Kreuz T, Chicharro D, Andrzejak RG:
Measuring spike train synchrony between neuronal populations.
CNS Conference, Berlin, Germany: BMC Neuroscience 10, 271 (2009).
48. Kreuz T, Haas JS, Morelli A, Abarbanel HDI, Politi A:
Measuring spike train synchrony and reliability.
SfN Meeting Program No. 319.6, San Diego, Ca, USA (2007).
49. Kreuz T, Haas JS, Morelli A, Abarbanel HDI, Politi A:
Measuring spike train synchrony and reliability.
CNS Conference, Toronto, Canada: BMC Neuroscience 8, 79 (2007).
50. Kreuz T, Andrzejak RG, Kraskov A, Mormann F, Lehnertz K, Grassberger P:
Measuring synchronization in coupled model systems: A comparison of different approaches.
Conference Proceedings "Topical problems of nonlinear wave physics", NWP, Russia (2005).
51. Kreuz T, Andrzejak RG, Kraskov A, Mormann F, Stögbauer H, Elger CE, Grassberger P, Lehnertz K:
Measuring synchronization and directionality in EEG time series from epilepsy patients: An application to seizure prediction
American Epilepsy Society, Annual Meeting, New Orleans, USA: *Epilepsia* 45 (7), 243 (2004).
52. Kreuz T, Andrzejak RG, Kraskov A, Mormann F, Stögbauer H, Elger CE, Grassberger P, Lehnertz K:
Time profile surrogates: A new method to validate the performance of seizure prediction algorithms.
American Epilepsy Society, Annual Meeting, Boston, USA: *Epilepsia* 44 (9), 231 (2003).
53. Kreuz T, Andrzejak RG, Kraskov A, Mormann F, Stögbauer H, Elger CE, Grassberger P, Lehnertz K:
Validating the performance of epileptic seizure prediction algorithms using simulated annealing.
Conference Proceedings "Topical problems of nonlinear wave physics", NWP, Russia (2003).
54. Kreuz T, Kraskov A, Andrzejak RG, Mormann F, Rieke C, Grassberger P, Elger CE, Lehnertz K:
Seizure prediction: Quantifying the performance of measures in distinguishing pre-ictal from inter-ictal states.
American Epilepsy Society, Annual Meeting, Seattle, USA: *Epilepsia* 43 (7), 48 (2002).

55. Kreuz T, Kraskov A, Quian Quiroga R, Grassberger P, Andrzejak RG, Mormann F, Rieke C, Lehnertz K, Elger CE:
The capability of different interdependence measures to predict epileptic seizures.
American Epilepsy Society, Annual Meeting, Philadelphia, USA: *Epilepsia* 42 (7), 39 (2001).
56. Kreuz T, Quian Quiroga R, Grassberger P, Lehnertz K, Elger CE:
Interdependencies in intracranial EEG recordings of epilepsy patients: A comparison of different measures.
International Epilepsy Congress, Buenos Aires, Argentina: *Epilepsia* 42 (2), 49 (2001).
57. Kreuz T, Lehnertz K, David P, Elger CE:
Symbolic Dynamics: Reducing the information content of the EEG for interictal focus localization in mesial temporal lobe epilepsy.
American Epilepsy Society, Annual Meeting, Los Angeles, USA: *Epilepsia* 41 (7), 212 (2000).

Further Abstracts and Conference Contributions

58. Mulansky M, Bozanic N, Kreuz T:
Time-resolved and parameter-free measures of spike train synchrony properties and applications.
CNS Conference, Prague, Tschechia (2015).
59. Bozanic N, Kreuz T:
SPIKY: a graphical user interface for monitoring spike train synchrony.
CNS Conference, Paris, France: *BMC Neuroscience* 14, P225 (2013).
60. Chicharro D, Kreuz T, Caporello E, Gentner TQ, Andrzejak RG:
Limitations of spike train distances to study the time-scales of natural sounds discrimination.
SfN Meeting Program No. 578.8, San Diego, Ca, USA (2010).
61. Chicharro D, Andrzejak RG, Kreuz T:
Studying the precision of temporal neural code: some limitations of spike train distances.
CNS Conference, Berlin, Germany: *BMC Neuroscience* 10, 130 (2009).
62. Mormann F, Kraskov A, Kreuz T, Andrzejak RG, Osterhage H, Elger CE, Lehnertz K:
Seizure prediction: Influence of EEG band-pass filtering on the predictive performance of synchronization measures.
Epilepsia 45(7), 62 (2004).
63. Andrzejak RG, Kreuz T, Mormann F, Kraskov A, Elger CE, Lehnertz K:
Nonlinearity: the key to a successful characterization of the spatial distribution of the epileptic process.
Epilepsia 45(7), 66 (2004).
64. Andrzejak RG, Kreuz T, Mormann M, Widman G, Elger CE, Lehnertz, K:
Surrogate Corrected Nonlinear Measures Allow Improved Focus Localization From Intracranial EEG Recordings In Epilepsy Patients.
Dynamic Days Europe, Mallorca, Spain, (2004).
65. Andrzejak RG, Kreuz T, Mormann F, Kraskov A, Rieke C, Elger CE, Lehnertz K:
Put your seizure prediction statistics to the test: The method of seizure time surrogates.

- Epilepsia 44(9), 172 (2003).
66. Mormann F, Kreuz T, Rieke C, Andrzejak RG, Kraskov A, Elger CE, Lehnertz K:
On the predictability of seizures.
Epilepsia 44(9), 172 (2003).
 67. Osterhage H, Mormann F, Kreuz T, Elger CE, Lehnertz K:
Synchronization and interdependence in intracranial EEG recordings from epilepsy patients:
A comparative study.
Epilepsia 44(9), 232 (2003).
 68. Andrzejak RG, Kraskov A, Kreuz T, Stögbauer H, Mormann F, Lehnertz K, Grassberger P:
On the use of bivariate surrogates techniques in combination with nonlinear interdependence
measures.
Conference Proceedings "Topical problems of nonlinear wave physics" NWP, Russia (2003).
 69. Kraskov A, Stögbauer H, Kreuz T, Andrzejak RG, Grassberger P:
New methods of calculating mutual information.
Conference Proceedings "Topical problems of nonlinear wave physics" NWP, Russia (2003).
 70. Mormann F, Kreuz T, Rieke C, Andrzejak RG, Kraskov A, David P, Elger CE, Lehnertz K:
Epilepsy: Does a pre-seizure state really exist?
Conference Proceedings "Topical problems of nonlinear wave physics" NWP, Russia (2003).
 71. Stögbauer H, Kraskov A, Kreuz T, Andrzejak RG, Grassberger P:
Multivariate analysis: Characterization of physiological states from intracranial EEG record-
ings.
Conference Proceedings "Topical problems of nonlinear wave physics" NWP, Russia (2003).
 72. Quian Quiroga R, Kreuz T, Grassberger P:
A Very Simple and Fast Measure of Synchronization and Delay Between Signals.
AIP Conf. Proc. 676, 372 (2003).
 73. Andrzejak RG, Rieke C, Mormann F, Kreuz T, David P, Elger CE, Lehnertz K:
On the influence of nonstationarity of the EEG on the capability of nonlinear surrogate
measures to characterize the spatial distribution of the epileptogenic process.
Epilepsia 43 (7), 43 (2002).
 74. Kraskov A, Kreuz T, Quian Quiroga R, Grassberger P, Mormann F, Andrzejak RG, Elger
CE, Lehnertz K:
Comparison of two phase synchronization analysis techniques for interictal focus lateraliza-
tion in mesial temporal lobe epilepsy.
Epilepsia 43 (7), 48 (2002).
 75. Mormann F, Kreuz T, Andrzejak RG, Rieke C, Kraskov A, David P, Elger CE, Lehnertz K:
Preictal state detection in continuous intracranial EEG recordings based on decreased phase
synchronization: problems and pitfalls.
Epilepsia 43 (7), 121 (2002).
 76. Quian Quiroga R, Kreuz T, Lehnertz K, Elger CE, Grassberger P:
Event Synchronization: A very simple and fast measure of synchronization and time delay
patterns.
Epilepsia 43 (7), 49 (2002).

77. Rieke C, Andrzejak RG, Mormann F, Kreuz T, David P, Elger CE, Lehnertz K:
The influence of nonstationarity and segmentation size on the analysis of intracranial EEG recordings.
Epilepsia 43 (7), 49 (2002).
78. Stögbauer H, Yang L, Grassberger P, Andrzejak RG, Kreuz T, Kraskov A, Elger CE, Lehnertz K:
Lateralization of the focal hemisphere in mesial temporal lobe epilepsy using independent component analysis.
Epilepsia 43 (7), 51 (2002).
79. Andrzejak RG, Kraskov A, Kreuz T, Mormann F, Grassberger P:
A comparison of the performance of different synchronization measures in combination with the method of bivariate surrogates.
Conference Proceedings "International Conference on Synchronization of Chaotic and Stochastic Systems", Saratov, Russia (2002).
80. Kraskov A, Kreuz T, Mormann F, Quiñero Quiroga R, Elger CE, Lehnertz K, Grassberger P:
Comparison of two phase synchronization analysis techniques: "Hilbert" and "Wavelet" phase synchronization.
Conference Proceedings "International Conference on Synchronization of Chaotic and Stochastic Systems", Saratov, Russia (2002).
81. Andrzejak RG, Lehnertz K, Rieke C, Mormann F, Kreuz T, David P, Elger CE:
Focus lateralization in mesial temporal lobe epilepsy: A comparison of linear and nonlinear measures.
Epilepsia 42 (7), 98 (2001).
82. Kraskov A, Kreuz T, Quiñero Quiroga R, Grassberger P, Mormann F, Lehnertz K, Elger CE:
Phase synchronization using continuous Wavelet Transform of the EEG for interictal focus localization in mesial temporal lobe epilepsy.
Epilepsia 42 (7), 38 (2001).
83. Mormann F, Lehnertz K, Andrzejak RG, Kreuz T, Rieke C, David P, Elger CE:
Preictal state detection in intracranial EEG recordings from epilepsy patients using the linear cross correlation function.
Epilepsia 42 (7), 39 (2001).
84. Rieke C, Lehnertz K, Andrzejak RG, Mormann F, Kreuz T, David P, Elger CE:
Characterizing nonstationarities in the EEG of epilepsy patients.
Epilepsia 42 (7), 40 (2001).
85. Lehnertz K, Andrzejak RG, Mormann F, Kreuz T, David P, Elger CE:
Forecasting epileptic seizures: Adequacy of different EEG analysis techniques.
Epilepsia 41 (7), 212 (2000).

Thesis

86. Kreuz T:
Measuring synchronization in model systems and electroencephalographic time series from epilepsy patients.
Interdisciplinary PhD thesis in physics, University of Wuppertal, Research Center Juelich

(2003). Supervisors: Prof. P. Grassberger, Research Center Juelich, Germany; Dr. K. Lehnertz, University of Bonn, Germany.

www.fz-juelich.de/nic-series/volume21/volume21.html

87. Kreuz T:

Symbolic dynamics in nonlinear model systems and time series of brain electrical activity.

Interdisciplinary Masters thesis in physics (German), University of Bonn (1999).

Supervisors: Prof. P. David, Prof. C. E. Elger, University of Bonn, Germany.

Stays and courses

- June / July 2014
Research stay.
School of Computing Science, University of Newcastle, UK.
- June 2014
Research stay.
Department of Epileptology, University of Bonn, Germany.
- August / September 2013
Research stay.
Department of Epileptology, University of Bonn, Germany.
- July / August 2012
Research stay.
Department of Epileptology, University of Bonn, Germany.
- June / July 2011
Research stay.
Department of Epileptology, University of Bonn, Germany.
- June / July 2010
Research stay.
Computational Neuroscience Group, Department of Information and Communication Technologies, University Pompeu Fabra (UPF), Barcelona, Spain.
- March / April 2006
Research stay.
Institute for Non-Linear Sciences (INLS), University of California, San Diego (UCSD), La Jolla, CA, USA.
- August 2005
Experimental and Computational Neurodynamics.
Summer school, Center for Theoretical Biological Physics (CTBP), University of California, San Diego (UCSD), La Jolla, CA, USA.
- May / June 2002
Synchronization: Theory and Application.
Summer school, NATO Advanced Study Institute, Mellis, Crimea region, Ukraine.

- September 2000
Nonlinear dynamics in the physics of environment.
Heraeus summer school, Potsdam, Germany.
- January - March 1997
Project on 'Group Theory and Molecular Vibrations' (Supervisor: Prof. G. S. Pawley).
University of Edinburgh, Great Britain.
- September 1996 - March 1997
Two terms at the Department of Physics, University of Edinburgh, Great Britain.

Grants

- Since January 2015
Member of the European Joint Doctorate (EJD) program 'Complex Oscillatory Systems: Modeling and Analysis (COSMOS)'
Funded by the European Commission.
- Since September 2012
Member of the Marie Curie Initial Training Network (ITN) 'Neural Engineering Transformative Technologies (NETT)'
Funded by the European Commission.
- Since January 2010
Member (and Co-founder) of the joint Israeli-Italian Laboratory for Neuroscience.
An initiative between the Institute of Complex Systems and the Tel Aviv University.
Funded by the Italian Ministry of Foreign Affairs.
- April 2007 - January 2010
Marie-Curie Individual Outgoing Fellowship.
Proposal N. 040576A, Spike Time Dependent Plasticity (STDP).
Institute for nonlinear sciences (INLS), University of California San Diego (UCSD), La Jolla, USA; Istituto dei Sistemi Complessi (ISC), CNR, Florence, Italy.
- February 2005 - January 2007
Marie-Curie Individual Intra-European Fellowship.
Proposal N. 0114344, Dynamical entropies in assemblies of neurons (DEAN).
Istituto dei sistemi complessi (ISC), CNR, Florence, Italy.
- October 2000 - May 2004
Transregional SFB 'Mesial Temporal Lobe Epilepsies - Project A2: Seizure Prediction'.
University of Bonn, University of Magdeburg, Research Center Juelich, Germany.
- March - September 2000
Graduate College 'Theoretical and numerical methods in particle physics and statistical physics'.
University of Wuppertal, Germany.

Organization of workshops

- NETT 2014 Workshop "Dynamics of Neural Circuits"
Part of the Marie Curie ITN 'Neural Engineering Transformative Technologies'
Florence, Italy (March 2014)
- CNS*2013 workshop on "New approaches to spike train analysis and neuronal coding"
Organized with Dr. Conor Houghton, University of Bristol, UK
CNS conference, Paris, France (July 2013)
- CNS*2011 workshop on "New approaches to spike train analysis and neuronal coding"
Organized with Dr. Conor Houghton, University of Bristol, UK
CNS conference, Stockholm, Sweden (July 2011)

Awards

- Brain Corporation Prize 2012 (Scholarpedia)
Awarded at the CNS conference, Paris, France (July 2013)
- OCNS Postdoctoral Fellow Travel Award
Awarded at the CNS conference, Berlin, Germany (July 2009)
- Poster prize
Awarded at the IEC conference, Argentina (May 2001)

Teaching experience

- May-June 2013
PhD course "Data analysis (including applications to electrophysiological signals)" (12h)
National Research Council (CNR), University of Florence, Italy
- June-July 2008
Summer course "Data analysis" for interns (20h)
University of California, San Diego, Ca, USA
- April 26 - May 8, 2006
PhD Course "Simple models of biological interest: From proteins to neurons" (2h)
University of Florence, Italy
- October 2003 - February 2004 (WS 03/04)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.
- April 2003 - June 2003 (SS 03)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.

- October 2002 - February 2003 (WS 02/03)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.
- April 2002 - June 2002 (SS 02)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.
- October 2001 - February 2002 (WS 01/02)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.
- April 2001 - June 2001 (SS 01)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.
- October 2000 - February 2001 (WS 00/01)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.
- April 2000 - June 2000 (SS 00)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.
- October 1999 - February 2000 (WS 99/00)
Assistant Teacher "Physics for students of Medicine, Biology and Pharmacy" (60h)
University of Bonn, Germany.

Referee experience

- Brain Research
- Chaos
- Communications in Nonlinear Science and Numerical Simulations
- Computational and Mathematical Methods in Medicine
- Fluctuation and Noise Letters (FNL)
- Frontiers Neuroscience, Frontiers in Neural Circuits
- IEEE Signal Processing Letters
- IEEE Transactions on Biomedical Engineering
- IEEE Transactions on Signal Processing
- International Journal of Neural Systems
- Journal of Neural Engineering
- Journal of Neurophysiology

- Journal of Neuroscience Methods
- Journal of Physics A
- Journal of Physiology (Paris)
- Journal of the Royal Society Interface
- Medical & Biological Engineering & Computing
- Phys Rev E
- Phys Rev Lett
- Physica D
- Physics Letters A
- Physica Scripta
- Scholarpedia
- Transactions on Neural Systems & Rehabilitation Engineering
- Water Resources Research

Editor experience

- Scholarpedia

Additional Skills

- Languages: German (native speaker), English, Italian (fluent), Spanish (basic)
- Operating systems: Windows, Unix
- Programming languages: Pascal, Delphi, C, C++
- Miscellaneous: LaTeX, HTML, MS-Office, Matlab

Florence, Italy, February 2015