name	**Bulcsú Sándor**

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citizenship:	Romanian
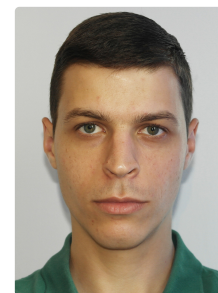
current

2018 - **Assistant professor, Department of Physics, Babeș-Bolyai University, Cluj-Napoca, Romania**

work experience

2017 - 2018 **Visiting researcher, Department of Physics, Babeș-Bolyai University, Cluj-Napoca, Romania**
ADVISOR: **Prof. Zoltán Néda**

2017 - 2018 **Postdoctoral researcher, Institute for Theoretical Physics, Goethe University, Frankfurt am Main, Germany**
ADVISOR: **Prof. Claudius Gros**

education

2013 - 2017 **PhD in Physics, Institute for Theoretical Physics, Goethe University, Frankfurt am Main, Germany**
ADVISOR: **Prof. Claudius Gros**

2011 - 2013 **MSc in Computational Physics, Department of Physics, Babeș-Bolyai University, Cluj-Napoca, Romania**
ADVISOR: **Prof. Zoltán Néda**

2008 - 2011 **BSc in Physics, Department of Physics, Babeș-Bolyai University, Cluj-Napoca, Romania**
ADVISOR: **Prof. Zoltán Néda**, **Asst. Ferenc Járai-Szabó**

2004 - 2008 **High school, Orbán Balázs Gimnázium, Cristuru-Secuiesc, Romania**

teaching

2013 - 2017 **Teaching Assistant at ITP, Goethe University Frankfurt**
ELECTRODYNAMICS, SELF-ORGANISATION: THEORY AND SIMULATIONS, PROGRAMMING FOR PHYSICISTS, COMPLEX AND ADAPTIVE DYNAMICAL SYSTEMS, ADVANCED INTRODUCTION TO C++ AND SCIENTIFIC COMPUTING

languages

Hungarian	**native**
Romanian	**good**
English	**good**
German	**intermediate**

computational skills

programing	**Python, C, C++, Java, Fortran**
systems	**Linux and Windows**
office	**Latex, Inkscape, Vi, Libre Office**

visits

2012 - 2013 **Eötvös Loránd University, Budapest, Hungary (6 months)**
ADVISOR: **Prof. Tél Tamás**

2011 **University of Bergen, Bergen, Norway (2 weeks)**
ADVISOR: **Prof. Zoltán Néda**

schools

2016 **Advanced Course on "Piecewise Smooth Dynamical Systems"**
CRM, UNIVERSITAT AUTONÒMA DE BARCELONA, Barcelona, Spain

2015 **INCF Short Course on Information Processing in Neural Systems**
INSTITUTE OF COGNITIVE SCIENCE, Osnabrück, Germany

2015 **Interdisciplinary College**
GESELLSCHAFT FÜR INFORMATIK, Günne, Germany

2014 **Winter School in Quantitative Systems Biology**
INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS, Trieste, Italy

2011 **IPP Summer University on Plasma Physics and Fusion Research**
MAX PLANCK INSTITUTE FOR PLASMA PHYSICS, Greifswald, Germany

2016   **2nd Poster Prize**
by Advisory board of Dynamics Days Europe at XXXVI Dynamics Days Europe 2016, Corfu, Greece

2016   **Travel award**
by U.S. National Science Foundation at Dynamics Days US 2016, Durham, NC, USA

2014   **Poster Prize Winner**
by F1000 Research at OCCAM 2014, Osnabrück, Germany

2012 - 2015   **Over-the Border Excellent Student Scholarship**
by National Excellence Program, Office of Public Administration and Justice, Budapest, Hungary

2012 - 2015   **Collegium Talentum Scholarship**
by Collegium Talentum, Tatabánya, Hungary

papers

2017   **How to test for partially predictable chaos**
Hendrik Wernecke, Bulcsú Sándor, Claudius Gros, Scientific Reports **7**:1087

2016   **Closed-loop robots driven by short-term synaptic plasticity: Emergent explorative vs. limit-cycle locomotion**
Laura Martin, Bulcsú Sándor, Claudius Gros, Frontiers in Neurorobotics **10**:12

2016   **Time-scale effects on the gain-loss asymmetry in stock indices**
Bulcsú Sándor, Ingve Simonsen, Bálint Zsolt Nagy, Zoltán Néda, Physical Review E **94**(2): 022311

2015   **The sensorimotor loop as a dynamical system: How regular motion primitives may emerge from self-organized limit cycles**
Bulcsú Sándor, Tim Jahn, Laura Martin, Claudius Gros, Frontiers in Robotics and AI **2**:31

2015   **A versatile class of prototype dynamical systems for complex bifurcation cascades of limit cycles**
Bulcsú Sándor, Claudius Gros, Scientific Reports **5**: 12316

2015   **A spring-block analogy for the dynamics of stock indexes**
Bulcsú Sándor, Zoltán Néda, Physica A: Statistical Mechanics and its Applications **427**: 122-131

2013   **Chaos on the conveyor belt**
Bulcsú Sándor, Ferenc Járai-Szabó, Tamás Tél, Zoltán Néda, Phys. Rev. E **87**(4): 042920

2012   **Rms-flux relation in the optical fast variability data of BL Lacertae object S5 0716+714**
Gabriela Raluca Mocanu and Bulcsú Sándor, Astrophysics and Space Science, **342**(1): 147-153

2011   **Spring-block model for a single-lane highway traffic**
Ferenc Járai-Szabó, Bulcsú Sándor and Zoltán Néda, Central European Journal of Physics **9**(4): 1002-1009

conference proceeding

2017   **Complex activity patterns generated by short-term synaptic plasticity**
Bulcsú Sándor, Claudius Gros, ESANN 2017 Proceedings **ISBN 978-2-87587-038-4**: 317

extended abstracts

2017   **A Self-Organized One-Neuron Controller for Artificial Life on Wheels**
Claudius Gros, Laura Martin, Bulcsú Sándor, Proceedings of ECAL 2017 **14**: 184-185

2017   **The role of the sensorimotor loop for cognition**
Bulcsú Sándor, Laura Martin, Claudius Gros, CEUR Workshop Proceedings, EU-Cognition 2016 **1855**: 40-41

2015   **Limit cycles with transient state dynamics in cyclic networks**
Bulcsú Sándor, Claudius Gros, BMC Neuroscience **16**(Suppl 1): P89

talks

2017   **The Role of Attractors in the Closed-loop Scheme of Robotic Locomotion**
XXXVII Dynamics Days Europe, University of Szeged, Szeged, Hungary

2017   **A dynamical systems approach to robotics: the role of attractors in locomotion**
Seminars in Statistical Physics, ITP, Eötvös Loránd University, Budapest, Hungary

2017   **Complex activity patterns generated by short-term synaptic plasticity**
ESANN 2017, Hotel Novotel, Bruges, Belgium

2016   **Partial predictability in chaos**
Seminars in Statistical Physics, ITP, Eötvös Loránd University, Budapest, Hungary

2015   **A new prototype dynamical system with a generalised mechanical potential**
Seminars in Statistical Physics, ITP, Eötvös Loránd University, Budapest, Hungary

2014   **Dynamics of working memory**
Seminars in Statistical Physics, ITP, Eötvös Loránd University, Budapest, Hungary

2013   **Chaos on the conveyor belt**
Magyar Fizikus Vándorgyűlés, Roland Eötvös Physical Society, Debrecen, Hungary

2013   **The complex phase space of a simple mechanical system**
XXXI. OTDK FiFöMa, University of Technology and Economics, Budapest, Hungary

2013   **Time scale effects on the asymmetry of inverse statistics in stock markets**
Statistical Physics Day, Hungarian Academy of Sciences, Budapest, Hungary

2016   **The role of sensori-motor loop for cognition**
EUCognition Meeting, "Cognitive Robot Architectures", TU Wien, Vienna, Austria

2016   **Short-term synaptic plasticity generates complex activity patterns of cell assemblies in Hopfield-networks**
XXXVI Dynamics Day Europe, Corfu Holiday Palace Hotel, Corfu, Greece

2016   **Complex time series of cell assemblies generated by short-term synaptic plasticity**
9th Bernstein Sparks Workshop, Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany

2016   **A new class of prototype dynamical systems for constructing multiple co-existing attractors**
Dynamics Days US 2016, Duke University, Durham, NC, USA

2015   **Limit cycles with transient state dynamics in cyclic networks**
CNS 2015, Organization for Computational Neurosciences, Prague, Chezch Republic

2015   **A prototype dynamical system with a generalized mechanical potential**
DPG 2015, Technische Universität Berlin, Berlin, Germany

2015   **Transient state dynamics arising from short-term synaptic plasticity**
OCCAM 2015, Institute of Cognitive Science, Osnabrück, Germany

2014   **Limit cycles in a ring network**
WSQSB 2014, International Centre for Theoretical Physics, Trieste, Italy

2014   **Dynamics of neural networks with transient synaptic plasticity rules**
OCCAM 2014, Institute of Cognitive Science, Osnabrück, Germany

2014   **Short-term synaptic plasticity in a ring network**
ESI-SyNC 2014, Ernst Strüngmann Institute for Neuroscience, Frankfurt am Main, Germany

2014   **Dynamics of neural networks with transient synaptic plasticity rules**
DPG 2014, Technische Universitä Dresden, Dresden, Germany

2012   **Time scale effects on the asymmetry of inverse statistics in stock markets**
TIM 12, West University, Timisoara, Romania