

Curriculum Vitae - Dirk Brockmann



Dirk Brockmann - Associate Professor
Department of Engineering Sciences and Applied Mathematics,
McCormick School of Engineering and Applied Science &
Northwestern Institute on Complex Systems (NICO)
Northwestern University

<http://rocs.northwestern.edu>

1. Professional Appointments

- 8/2009-present Affiliate Faculty Member, Transportation Center, Northwestern University, Evanston, IL USA
- 12/2008-present Faculty Member, Northwestern Institute for Complex Systems, Northwestern University, IL, USA
- 7/2008-present Associate Professor, Department of Engineering Sciences & Applied Mathematics, McCormick School of Engineering and Applied Science, Northwestern University, IL, USA
- 1/2006-7/2007 Group Leader, Complex Dynamics Group, Department of Nonlinear Dynamics, Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany
- 9-11/2003 Visiting Scientist, Kavli Institute for Theoretical Physics, University of Santa Barbara, CA, USA
- 2003-2005 Postdoctoral Researcher, Department of Nonlinear Dynamics, Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany

2. Education

- 2003 PhD (Dr. rer. nat.) in Theoretical Physics, Georg August University, Göttingen, *summa cum laudae*
- 1996-2003 PhD Program, Department of Nonlinear Dynamics, Max-Planck Institute for Dynamics and Self-Organization, Göttingen, Germany
- 1995 Diplom in Physics, Institute for Theoretical Physics, Georg August University, Göttingen
- 1990-1995 Undergraduate and graduate studies of Physics and Mathematics, Georg August University Göttingen, Germany
- 1988-1990 Undergraduate Studies, Duke University, USA

3. Selected Publications

- P. Lemey, A. Rambaut, T. Bedford, N. R. Faria, F. Bielejec, G. Baele, C. A. Russell, D. J. Smith, O. G. Pybus, D. Brockmann, M. A. Suchard, The seasonal flight of influenza: a unified framework for spatiotemporal hypothesis testing, *PLoS Biology*, (under review, 2013).
- C. Noble, J. P. Bagrow, and D. Brockmann, The role of caretakers in disease dynamics, *J. Stat. Phys.*, (under review, 2013)
- O. Woolley-Meza, D. Grady, C. Thiemann, J.P. Bagrow, D. Brockmann, Eyjafjallajökull and 9/11: disasters and worldwide transportation. *Proc. Natl. Acad. Sci.* (2013) (under review).
- J. P. Bagrow, D. Brockmann, Preferential attachment networks without "rich-get-richer" effects. *Phys. Rev. Lett.* (in print, 2013).
- J. P. Bagrow, D. Helbing, D. Brockmann, Predictability in global disease dynamics (under review, 2013).
- D. Grady, C. Thiemann, D. Brockmann, Robust classification of salient links in complex networks. *Nature Communications* **3**, 864 (2012).
- D. Brockmann, Spotlight on mobility. *Nature* **48**, 40-41 (2012).
- D. Grady, R. Brune, C. Thiemann, F. Theis, D. Brockmann, Modularity maximization and tree clustering: Novel ways to determine effective geographic borders. in *Handbook of Optimization in Complex Networks*, M. Thai, T. Pardalos, M. Panos(eds.) Springer (2012).
- B. Blasius, D. Brockmann, Frontiers in network science: advances and applications. *Eur. Phys. J. B* **84**, 491-492 (2011).
- V. V. Belik, T. Geisel, D. Brockmann, Recurrent host mobility in spatial epidemics: beyond reaction-diffusion. *Eur. Phys. J. B* **84**, 579-587 (2011).
- O. Woolley-Meza, C. Thiemann, D. Grady, J. J. Lee, H. Seebens, B. Blasius, D. Brockmann, Complexity in human transportation networks: A comparative analysis of worldwide air transportation and global cargo ship movements. *Eur. Phys. J. B* **84**, 589-600 (2011).
- V. V. Belik, T. Geisel, D. Brockmann, Natural human mobility patterns and spatial spread of infectious diseases. *Phys. Rev. X* **1**, 011001 (2011).
- D. Brockmann, Statistical Physics: The physics of where we go. *Nature Physics* **6**, 720-721 (2010).
- C. Thiemann, F. Theis, D. Grady, R. Brune, D. Brockmann, The structure of borders in a small world. *PLoS ONE* **5**, e15422 (2010).
- D. Brockmann, Following the money. *Physics World*, Feb.. 31-34 (2010).
- D. Brockmann, Human Mobility and Spatial Disease Dynamics. in *Reviews of Nonlinear Dynamics and Complexity*, H. G. Schuster (ed.), Wiley-VCH (2009).
- D. Brockmann, Wie ein Internet-Spiel half die Ausbreitung der Schweinegrippe vorherzusagen, in *Proc. to the 3. XLAB Sciencefestival*, Göttingen, Germany, (2009)
- D. Brockmann, F. Theis, Money circulation, trackable items, and the emergence of universal human mobility patterns. *IEEE Pervasive Computing* Oct.-Dec., 78-85 (2008).
- D. Brockmann, Der Weg ist das Ziel. *Physik Journal* **7**, Nr. 2, 20 (2008).
- D. Brockmann, Wie Netzwerke kleinzukriegten sind. *Physik Journal* **7**, Nr. 10, 18 (2008).
- D. Brockmann, Money circulation science. in *Anomalous Transport: Foundations and Applications*, R. Klages, et al. (eds.), Wiley-VCH (2008).
- T. Geisel, D. Brockmann, Seuchen und Reisen – Neue Modelle zur Vorhersage von Epidemien in einer globalisierten Welt. in *Acta Nova Leopoldina* **97**, Natur und Migration, H. zur Hausen (ed.) (2008).
- D. Brockmann, A physicist enthuses about criticality in biological development. *Nature* **451**, 111 (2008).
- D. Brockmann, Anomalous diffusion and the structure of human transportation networks. *Eur. Phys. J. Special Topics* **157**, 173-189 (2008).
- D. Brockmann, L. Hufnagel, Front propagation in reaction-superdiffusion dynamics: Taming Lévy flights with fluctuations, *Phys. Rev. Lett.*, **98**, 178301 (2007).

- D. Brockmann and L. Hufnagel, The scaling laws of human travel – A message from George. in *Nonlinear Modeling in Ecology, Epidemiology and Genetics*, B. Blasius (ed.), World Scientific (2007).
- V. V. Belik, D. Brockmann, Accelerating random walks by disorder. *New Journal of Physics* 9, 54 (2007).
- D. Brockmann, Modelle zur geographischen Seuchenausbreitung. *Flug- und Reisemedizin*, 13:11-12 (2006).
- D. Brockmann, L. Hufnagel and T. Geisel, The scaling laws of human travel. *Nature* 439, 462 (2006).
- D. Brockmann, L. Hufnagel, T. Geisel, Dynamics of modern epidemics. in *SARS: A Case Study in Emerging Infections*, A. McLean et al. (eds.), Oxford University Press (2005).
- L. Hufnagel, D. Brockmann and T. Geisel, Forecast and control of epidemics in a globalized world. *Proc. Natl. Acad. Sci.* 101, 15124 (2004).
- D. Brockmann, T. Geisel, Particle dispersion on rapidly folding random hetero-polymers. *Phys. Rev. Lett.* 91, 048303 (2003).
- D. Brockmann, T. Geisel, Lévy flights in inhomogeneous media. *Phys. Rev. Lett.* 90, 170601 (2003).
- D. Brockmann, I.M. Sokolov, Lévy flights in external force fields: From models to equations. *Chem. Phys.* 284, 409-421 (2002).
- D. Brockmann, T. Geisel, The ecology of gaze shifts. *Neurocomputing* 32, 643-650 (2000).
- M. Riesenhuber, H.-U. Bauer, D. Brockmann, T. Geisel, Breaking rotational symmetry in a self-organizing map model for orientation map development. *Neural Computation* 10, 717-730 (1998).
- H.-U. Bauer, D. Brockmann, T. Geisel, Analysis of ocular dominance pattern formation in a high-dimensional self-organizing-map Model. *Network*, 8, 17-33 (1997).
- H.-U. Bauer, D. Brockmann, T. Geisel, Analysis of ocular dominance pattern formation in a high-dimensional self-organizing-map model. in *Network - Computation in Neural Systems* 8, 17 (1997).
- D. Brockmann, T. Geisel, The Lévy-flight nature of gaze shifts. in *Proceedings of the 27th Göttingen Neurobiology Conference*, N. Elsner and U. Eysel (eds.), Thieme, 1, 876 (1999).
- D. Brockmann, M. Riesenhuber, H.-U. Bauer, T. Geisel, Conditions for the joint emergence of orientation and ocular dominance in a high-dimensional self-organizing map. in *Proceedings to the CNS 97*, J. Bower (ed.) (1997).
- D. Brockmann, H.-U. Bauer, M. Riesenhuber, T. Geisel, SOM-model for the development of oriented receptive fields and orientation maps from non-oriented ON-center OFF-center inputs. in *Artificial Neural Networks – ICANN'97*, W. Gerstner et al. (eds.), Springer, 207-12 (1997).
- H.-U. Bauer, M. Riesenhuber, D. Brockmann, T. Geisel, Analysis of SOM-based models for the development of visual maps. in *Proceedings to the WSOM '97*, L. P. Oy (ed.), 233-38(1997).

4. Presentations

4.1. Plenary & keynote talks

- Plenary Speaker, International Conference on Network Science 2013, Copenhagen, Jun. 2013 (announced)
- Symposium speaker - 2013 AAAS Annual Meeting, Boston, Feb. 2013
- Evening Talk - Networks Frontier Workshop, Northwestern University, Dec. 2011
- Math Awareness Month: Plenary Lecture, Arizona State University, April 2011
- Banquet Talk - 52nd Annual Meeting - American Physical Society - Division of Plasma Physics, Chicago, Nov. 2010
- German-American Kavli Frontiers of Science 2009, National Academy of Sciences, Irvine, CA, June 2009
- SHEA 2009- Society of Healthcare and Epidemiology of America Meeting, San Diego, March 2009
- Keynote Lecture, UBS Global Event, Zurich, Switzerland, April 2008
- Keynote Lecture, IdeaFestival 2007 - 3 days of events and a dizzying array of extraordinary thinkers, Louisville, Kentucky. Sept. 2007

- Keynote Lecture, 59th Annual Meeting of the Germany Society of Hygiene and Microbiology, Sept. 2007.
- Keynote Lecture, XLAB Science Festival, Göttingen, Germany, Dec. 2006 (popular scientific).
- Plenary Lecture, Dynamics Days Europe 2006, Crete, Greece, Sept. 2006.
- Keynote Lecture, Le Vetrine del CNR - l'uomo e la scienza antiche e nuove teorie, Rome, Italy, March 2006 (popular scientific).
- Keynote Lecture, Physik am Samstagvormittag - Physik der Naturkatastrophen, Bayreuth, Germany Feb. 2006 (popular scientific).
- Keynote Lecture, Schladminger Gesundheitstage Pandemie - Muss sich Österreich fürchten?, Schladming, Austria, Sept. 2005.
- Keynote Lecture, 7. Kongress Medizin und Mobilität - Deutsche Gesellschaft für Luft- und Reisemedizin, Cologne, Germany, June 2005.

4.2. Invited talks & Colloquia

- Complex Systems Colloquium, Indiana University, Nov. 2011
- Workshop: Search and Exploration, Cargese, France, April 2011
- Dynamics Days Conference '11, Durham, NC, Jan. 2011
- Workshop: Data driven dynamical networks, Les Houches, France, Oct. 2010
- Workshop: Cultural Evolution in Spatially Structured Systems, University College London, Sept. 2010
- EuroScience Open Forum, Torino, Italy July 2010
- Colloquium, Center for Complex Network Research, Northeastern University, Boston April 2010
- Spring Meeting German Physical Society, Mar. 2010
- APS March Meeting, Portland, Mar. 2010
- Epidemics Workshop, Bristol, UK, Sept. 2009
- Diffusion Fundamentals III Conference, Athens, Greece, Aug. 2009
- NetSci 2009 - International Workshop on Network Science, Venice, Italy, July 2009
- Mathematics and Ecology Colloquium, Georgia Tech, Atlanta, March 2009
- Colloquium, Center for Infectious Disease Dynamics, PennState, Feb. 2009
- Computational Neuroscience Meeting, Berlin, Germany, Jul. 2009
- Colloquium, Center for Statistics, University of Göttingen, Göttingen, Germany, Juni 2008
- EPSRC AMORPH Workshop Complex Networks in Biology, Leeds April 2008
- Workshop Is there a physics of Society, Santa Fe Institute, Santa Fe, USA, Jan. 2008
- Colloquium, Center for Complex Network Research, Northeastern University, Boston, Jan. 2008
- Max-Planck Institute for Physics of Complex Systems Colloquium, Dresden, Germany Dec. 2007
- Physics Colloquium, Humboldt University Berlin, October 2007
- Physics Colloquium, University of Bremen, Bremen, June 2007.
- Santa Fe Institute, Santa Fe, May 2007
- The Zurich Physics Colloquium, Zurich, April 2007.
- Colloquium, Department of Engineering and Applied Mathematics, Northwestern University, March 2007.
- Hauptvortrag, Frühjahrstagung – Deutsche Physikalische Gesellschaft (DPG), Regensburg, March 2007.
- Physikalisches Kolloquium, Institut für Theoretische Physik, Universität Saarbrücken, Nov. 2006.
- Workshop „Active Motion and Swarms“, Berlin, Dec. 2006.
- University Clinic Münster, Nov. 2006.
- Robert Koch Institute, Berlin, Nov. 2006.
- Institute of Physics, University of Potsdam, July 2006.

- 373. WE-Heraeus-Seminar - Anomalous Transport: Experimental Results and Theoretical Challenges, Bad Honnef, July 2006.
- School of Engineering, Computer Science and Mathematics, University of Exeter, UK, June 2006.
- Department of Zoology, Oxford University, UK, June 2006.
- AMORH Workshop „Networks, Epidemics and Evolution“, Royal Holloway University of London, UK, June 2006.
- Institut für Theoretische Physik, Göttingen, May 2006.
- Geophysikalisches Institut, Göttingen, April 2006.
- Advanced Course on Epidemiology of Infectious Diseases, Instituto Gulbenkian de Ciencia, Lissabon, Portugal, April 2006.
- Hauptvortrag, Frühjahrstagung – Deutsche Physikalische Gesellschaft (DPG), Dresden, March 2006.
- March Meeting – American Physical Society, Baltimore, USA, March 2006.

5. Research in the Media

5.1. US Coverage:

- Disease Daily, Creating Connections: How Transportation Data can Predict Pandemics, (Feb 26, 2013)
- The Atlantic, We've Been Looking at the Spread of Global Pandemics All Wrong (Feb 25, 2013)
- National Public Radio (NPR), Krulwich wonders, A 'Whom Do You Hang With?' Map Of America (April 17, 2013)
- CBS Show Numb3rs - Scratch - Crime investigation based on research (Jan 8, 2010)
- National Public Radio, Swine Flu Simulation Predicts 1,700 Cases By June (May 1, 2009)
- ABC7 Chicago, Technology is helping scientists predict where and how quickly infections can spread (April 30, 2009)
- Fox News Chicago, Worst-Case Model: 1,700 U.S. Flu Cases (April 30, 2009)
- CBS Chicago, Worst Case Scenario: Swine Flu Infects 121 In City (April 29, 2009)
- The New York Times (front page), Predicting the Flu With the Aid of (George) Washington (May 4, 2009)
- LA Times, Scientists see this flu strain as relatively mild (April 30, 2009)
- USA Today, 'Fate of this outbreak' may be determined this week, (May 5, 2009)
- LiveScience, 'Worst-Case' Scenario for Flu Estimated, (May 1, 2009)
- Google Current News, Google's Top Searches (Feb. 2006)
- The New York Times, Money-Circulation Science (Dec 10, 2006)
- NBC News, Circulation of money may predict pandemics (Jan 25, 2006)
- Voice of America, "Where's George?" Goes from Web Diversion to Disease Research Tool (radio interview - Jan 25, 2006)

5.2. International Coverage:

- ZEIT Wissen, Netzwerkforschung: Total vernetzt (Jan 25, 2010; Germany)
- Spiegel Online, Netzwerkforschung: So tickt das Wir (Dec 26, 2009; Germany)
- Le Monde, Les chemins du virus passent par les billets de 1 dollar, sur Internet, (May 5, 2009; France)
- Welt am Sonntag, Kleine Geschichte der großen Unsicherheit, (May 3, 2009; Germany)
- ZDF heute nacht, Der Weg des Virus (Jan 26, 2006, German television)
- hr3, Abenteuer Erde, Seuchenausbreitung: Göttinger Forscher entwickeln Vorhersagemodell (Oct 11, 2006, German television)
- rbb OZON, Prognose – Wie sich Epidemien ausbreiten (Feb 15, 2006, German television)

- 3sat nano, Seuchen und Dollarnoten verbreiten sich ähnlich (Mar 1, 2006, German television)
- NDR Hallo Niedersachsen, Wie sich Seuchen ausbreiten (Feb 22, 2006, German television)
- Spiegel Online, Computer simulieren die Killerseuche (Feb 21, 2006, Germany)
- The Guardian, Money talks: tracking dollar bills helps explain how diseases spread (Jan 26, 2006; UK)
- New Scientist, Banknote tracking helps model spread of disease (Jan 25, 2006; UK)
- ORF, Mit Dollar-Noten der Seuchenverbreitung auf der Spur (Jan 26, 2006; Austria)
- El Mundo, Un juego de Internet aporta pistas para predecir la propagación de epidemias (Jan 25, 2006; Spain)
- Science et Avenir, Les pérégrinations d'un billet de banque utiles à l'épidémiologie (Jan 26, 2006; France)
- 3sat, Seuchen und Dollarnoten verbreiten sich ähnlich (Feb 15, 2006; German television)
- Deutschlandfunk, Von Geldströmen und Pandemien (Jan 26, 2006; German radio)
- Spiegel Online, Seuchen Prognose - Forscher finden das Gesetz des Reisens (Jan 26, 2006, German)
- Focus, Viren reisen wie Dollarnoten (Jan 26, 2006; German)
- Süddeutsche Zeitung, Bewegte Erreger - Dollars und Viren - Die Wege von Geldnoten machen Epidemien berechenbar (Jan 26, 2006, German)
- Frankfurter Allgemeine Zeitung, Die Gesetze des Reisens (Jan 26, 2006; German)
- Der Stern, Dollars verraten Reisewege von Viren (Jan 26, 2006; German)
- Die Welt, Geldnoten zeigen Forschern Verbreitungswege von Erregern auf (Jan 26, 2006; German)
- Das Handelsblatt, Analyse der Reisewege von Geldscheinen erleichtert Seuchenprognose (Jan 25, 2006; German)
- Spektrum der Wissenschaft, Das Gesetz des Reisens (Apr 2006; German)
- ZDF heute, news feature (Oct. 2004; German television)
- RTL Aktuell, news feature (Oct 20, 2004; German television)
- SAT.1 News, news feature (Oct 23, 2004; German television)
- SAT.1 Planetopia, science program feature (Sep 26, 2005; German television)
- WDR Q21, science program feature (Dec 14, 2004; German television)
- WDR Quarks & Co., science program feature (Oct 2005; German television)
- Der Spiegel, Wie eine Seuche die Welt überzieht (Oct 19, 2004)
- Die Welt, Neues Vorhersage-Modell für globale Seuchen (Oct 20, 2004; German)
- Frankfurter Allgemeine Zeitung, Vorhersagemodell über die Ausbreitung von Epidemien entwickelt (Oct 19, 2004; German)
- Hamburger Abendblatt, Modellrechnung für Seuchen (Oct 20, 2004; German)
- GEO Magazin, Mathematik: Mit SARS um die Welt (Nov 7, 2004; German)
- Pro-Physik, In 80 Tagen um die Welt: Epidemie-Vorhersagen auf der Basis von Flugpassagierströmen (Oct 19, 2004; German)

6. Awards & Fellowships

- Annual Cole-Higgins Awards for Excellence in Teaching and Advising (\$ 3000), Northwestern University, 2012
- Best talk (presented by PhD candidate O. Woolley-Meza), NetSci 2012
- Best poster (presented by PhD candidates I. Velando & D. Grady), NetSci 2012
- Young Scientist Award (€ 5000), Physics of Socio-Economic Systems Division, German Physical Society, 2010

- Winner of the International Science and Engineering Visualization Challenge, National Science Foundation & American Association for the Advancement of Science, 2010
- Associate Student Government Faculty Honor Role 2009
- Kavli Fellow, National Academy of Science, 2009

7. Grants & Funding

- 2012: National Science Foundation
Project: *Dynamics and Evolution of Modular, Hierarchical Structures in Natural and Engineered Biological Systems*
Entire Volume: \$899,508 (Share: \$600,258)
Role: PI
(PENDING)
- 2012: Northwestern Institute on Complex Systems Seed Grant, The Genome of Science
Entire Volume: \$10000 (Share: \$5000)
Role: PI
- 2012: CCITT - Center for the Commercialization of Innovative *Transportation Technology: Shortest Path Tomography: A Tool for Optimizing Public Transit Networks, Phase I*
Volume: \$70000
Role: PI
- 2010-2013: Volkswagen Foundation, funding initiative New Conceptual Approaches to Modeling and Simulation of Complex Systems: *Complex Networks as a Phenomenon Across Disciplines. Project: Bioinvasion and Epidemic Spread in Complex Transportation Networks II*
Volume: €274,000
Role: PI
- 2009-2014: National Cancer Institute
Project: *Physical Sciences-Oncology Center (NU-PSOC)*.
Volume: \$13,500,000 (Share: 1 Postdoc, 1 student)
Role: co-PI
- 2008-2012: European Commission, Large-Scale Integrating Project (IP) under the Seventh Research Framework Programme (FP7).
Project: *EPIWORK - Developing the framework for an epidemic forecast infrastructure*
Volume: € 4,800,000 (Share: € 500,000)
Role: PI and Workpackage Leader
- 2007-2010: Volkswagen Foundation, Funding initiative New Conceptual Approaches to Modeling and Simulation of Complex Systems: *Complex Networks as a Phenomenon Across Disciplines*.
Project: *Bioinvasion and Epidemic Spread in Complex Transportation Networks*
Volume: € 567.800
Role: PI

8. Activities and Commitments

- Graduate Recruiting, Dept. of Engineering Sciences & Applied Mathematics, (2011-present)
- Investigation Committee, Office of Research Integrity, (2011-2012)
- Executive Committee, Northwestern Institute on Complex Systems, (2011-present)
- Curriculum Committee, Northwestern Institute on Complex Systems, (2010-present)
- Committee Member, One Book One Northwestern (2009-2010)
- McCormick Global Ambassador to Germany, Northwestern University (2008-present)
- Curriculum Committee, School of Engineering and Applied Science, (2008-present)
- National Academy of Engineering 2013 German-American Frontiers of Engineering organizing committee, May 2013 (location TBA).

- International Collaborator, Research Training Group 1644 "Scaling Problems in Statistics", University of Göttingen, Germany (2009-present)
- Advisory Committee Member, Dynamics Days 2010, Evanston, Jan. 2010
- Program Committee Member Conference Engaging Data: First International Conference on Applications and Standards for Managing Electronic Information, (Oct. 2009)
- Member of Nature Reader Advisory Panel, Nature (2008-present)

8.1. Organization of workshops and symposia:

- Session Organizer, German American Frontiers of Engineering, National Academy of Engineering, Irvine, CA, April. 2013
- Symposium Advances in Complex Networks: recent developments and applications, Harnack Haus in Berlin funded by the Volkswagen Foundation, Sept. 2009
- Workshop Epidemics in evolving networks, MPI for physics of complex systems, Dresden, Dec. 2007
- Symposium Non-linear transport phenomena in complex systems, Spring Meeting of the German Physical Society, Regensburg, 2007

8.2. Reviewing Commitments:

- Nature, Science, Proc. Nat. Acad. Sci., PLoS Medicine PLoS Computational Biology, PLoSOne, Journal of the Royal Society Interface, Phys. Rev. Lett., Phys. Rev. X, Phys. Rev. E, Phys. Rev. B, New Journal of Physics, Dynamical Systems, JStat, Nonlinearity, Bulletin of Mathematical Biology, German Science Foundation, Springer-Verlag, Wiley-VCH, Cambridge University Press

8.3. Editorial Commitments:

- Editorial Board, New Journal of Physics (2010-present)
- Associate Editor, Network Science (2012-present)

8.4. Synergistic activities and miscellaneous commitments:

- Contribution of video clips and computer simulations to Exhibition Albert Einstein: Chief Engineer of the Universe, Berlin, 16/5-30/9/2005
- Contribution of video clips and computer simulations to Exhibition Evolution: Die Wege des Lebens, German Museum of Hygiene, Dresden, 24/9/2005-13/7/2006
- Contribution of computer simulations to Special Exhibition Computer.Medicine, Heinz Nixdorf Museum, Paderborn, 24/10/2006
- Contribution of illustration "Global Traffic" to BBC Focus Magazine, 6/2006
- Contribution of video clip "Global Human Mobility" to BBC Panorama television program 10/2005
- Contribution of multimedia material to BBC Horizon, television program, 4/2006

9. Teaching & Course Development

9.1. Course taught

- Fall 2008: APPM 495-0: Computational Epidemiology (CTEC: 5.25)
- Winter 2009: MATH 234-0: Multivariate Calculus (CTEC: 4.69)
- Spring 2009: APPM 311-3: Complex Analysis (CTEC: 5.38)
- Winter 2010: APPM 448-0: Numerical Methods for Random Processes (CTEC: 5.11)
- Spring 2010: APPM 495-0: Dynamical Processes on Networks (CTEC: 4.09)
- Spring 2010: APPM 322-0: Applied Dynamical Systems (CTEC: 3.83)

- Fall 2010: APPM 495-0: Computational Epidemiology (CTEC: 5.38)
- Winter 2011: APPM 234-0-57: Multivariate Calculus (CTEC: 4.89)
- Winter 2011: APPM 234-0-67: Multivariate Calculus (CTEC: 5.14)
- Fall 2011: APPM 395-0: Introduction to Complex Networks (CTEC: 5.15)
- Winter 2012: APPM 234-0: Multivariate Calculus (CTEC: 5.71)

9.2. Course Developed

- APPM 395-0: Introduction to Complex Systems (in development)
- APPM 395-0: Introduction to Complex Networks
- APPM 495-0: Dynamical Processes on Networks
- APPM 495-0: Mathematical Epidemiology
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