

# Curriculum Vitae



Prof. Dr. 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  
2145 Sheridan Rd  
Evanston, IL 60208  
United States

phone: +1-847-491-4491

email: [brockmann@northwestern.edu](mailto:brockmann@northwestern.edu)

web: <http://rocs.northwestern.edu>

## Professional Appointments:

- 8/2009-present**     Affiliate Faculty Member  
The Transportation Center  
Northwestern University, Evanston, IL USA
- 12/2008-present**     Faculty Member  
Northwestern Institute for Complex Systems (NICO)  
Northwestern University, IL, USA
- 9/2008-present**     Associate Professor  
Department of Engineering Sciences and Applied Mathematics  
McCormick School of Engineering and Applied Science  
Northwestern University, IL, USA
- 6/2008-9/2008**     Visiting Associate Professor  
Department of Engineering Sciences and Applied Mathematics  
McCormick School of Engineering and Applied Science  
Northwestern University, IL, USA
- 7/2007-6/2008**     Adjunct Associate Professor  
Department of Engineering Sciences and 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
- 9-10/2003**     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

## Education:

- 2003** PhD (Dr. rer. nat.) in Theoretical Physics, Georg August University, Göttingen
- 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, Durham, NC, USA

## Selected Publications:

- ▶ D. Brockmann, *Human Mobility and Spatial Disease Dynamics*, in *Reviews of Nonlinear Dynamics and Complexity*, H. G. Schuster (ed.), Wiley-VCH, (2009).
- ▶ D. Brockmann, *A physicist enthuses about criticality in biological development*, *Nature*, 451, 111 (2008)
- ▶ 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, *Anomalous diffusion and the structure of human transportation networks*, *European Physical Journal-Special Topics*, 157, 173-189 (2008)
- ▶ V. Belik & D. Brockmann, *Accelerating random walks by disorder*, *New Journal of Physics*. 9:54, (2007).
- ▶ D. Brockmann, L. Hufnagel and T. Geisel, *The scaling laws of human travel*, *Nature* 439, 462, (2006).
- ▶ L. Hufnagel, D. Brockmann and T. Geisel, *Forecast and control of epidemics in a globalized world*, *Proc Natl Acad Sci USA* 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).

## Selected Lectures/Presentations:

- ▶ Keynote Lecture UBS Global Event, Zurich, April 2008
- ▶ Keynote Lecture, IdeaFestival 2007 -3 days of events and a dizzying array of extraordinary thinkers. [www.ideafestival.com](http://www.ideafestival.com), Louisville, Kentucky. Sept. 2007
- ▶ 59th Annual Meeting of the Germany Society of Hygiene and Microbiology, Sept. 2007.
- ▶ XLAB Science Festival, Göttingen, Dec. 2006 (popular scientific).
- ▶ Plenary Lecture, Dynamics Days Europe 2006, Greece, Sept. 2006.
- ▶ Keynote Lecture, Le Vetrine del CNR - *l'uomo e la scienza antiche e nuove teorie*, Rome, March 2006 (popular scientific).
- ▶ Physik am Samstagvormittag - *Physik der Naturkatastrophen*, Bayreuth, 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, *Dynamik moderner Pandemien*, June 2005.

## Research in the media:

### 2009: Predicting the spread of human H1N1 Influenza A (Swine flu) in the United States

#### Selected Television/Radio Coverage:

- ▶ 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)
- ▶ Chicago Public Radio [Projected Swine Flu in Chicago](#) (April 28, 2009)
- ▶ CBS Chicago, [Worst Case Scenario: Swine Flu Infects 121 In City](#) (April 29, 2009)

#### Selected Press Coverage:

- ▶ The New York Times (page 1), [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)
- ▶ Le Monde, [Les chemins du virus passent par les billets de 1 dollar sur Internet](#) (french - May 5, 2009)
- ▶ USA Today, ['Fate of this outbreak' may be determined this week](#), (May 5, 2009)
- ▶ Welt am Sonntag, [Kleine Geschichte der großen Unsicherheit](#), (May 3, 2009)
- ▶ The Chosun Ilbo, (Korea), [Spread of Dollar Bills 'Helps Predict Flu Path'](#) (May 5, 2009)
- ▶ LiveScience, ['Worst-Case' Scenario for Flu Estimated](#), (May 1, 2009)
- ▶ Chicagobreakingnews.com, [Study: 1,700 Americans could catch swine flu](#), (April 29, 2009)
- ▶ Medill Reports: Chicago, [Swine flu predictions are in](#), (April 30, 2009)

### 2006: The scaling laws of human travel

#### Selected Television/Radio Coverage:

- ▶ Google Current News, [Google's Top Searches](#) (Feb. 2006)
- ▶ ZDF heute nacht, [Der Weg des Virus](#) (Jan 26, 2006)
- ▶ hr3, [Abenteuer Erde, Seuchenausbreitung: Göttinger Forscher entwickeln Vorhersagemodell](#) (Oct 11, 2006)
- ▶ rbb OZON, [Prognose – Wie sich Epidemien ausbreiten](#) (Feb 15, 2006)
- ▶ 3sat nano, [Seuchen und Dollarnoten verbreiten sich ähnlich](#) (Mar 1, 2006)
- ▶ NDR Hallo Niedersachsen, [Wie sich Seuchen ausbreiten](#) (Feb 22, 2006)
- ▶ Spiegel Online, [Computer simulieren die Killerseuche](#) (Feb 21, 2006)

#### Selected Press Coverage:

- ▶ The New York Times, [Money-Circulation Science](#) (Dec 10, 2006)
- ▶ NBC News, [Circulation of money may predict pandemics](#) (Jan 25, 2006)
- ▶ The Guardian, [Money talks: tracking dollar bills helps explain how diseases spread](#) (Jan 26, 2006)
- ▶ New Scientist, [Banknote tracking helps model spread of disease](#) (Jan 25, 2006)
- ▶ ORF, [Mit Dollar-Noten der Seuchenverbreitung auf der Spur](#) (Jan 26, 2006)
- ▶ Voice of America, ["Where's George?" Goes from Web Diversion to Disease Research Tool](#) (radio interview - Jan 25, 2006)
- ▶ El Mundo, [Un juego de Internet aporta pistas para predecir la propagación de epidemias](#) (Jan 25, 2006)
- ▶ Membrana, [Полёты 1 доллара предсказывают характер всемирной эпидемии](#) (Jan 25, 2006)
- ▶ Terra, [Site rastreia notas de dólar e explica pandemias](#) (Jan 25, 2006)
- ▶ Science et Avenir, [Les pérégrinations d'un billet de banque utiles à l'épidémiologie](#) (Jan 26, 2006)
- ▶ 3sat, [Seuchen und Dollarnoten verbreiten sich ähnlich](#) (Feb 15, 2006)

- ▶ Deutschlandfunk, [Von Geldströmen und Pandemien](#) (Jan 26, 2006)
- ▶ Spiegel Online, [Seuchen Prognose - Forscher finden das Gesetz des Reisens](#) (Jan 26, 2006)
- ▶ Focus, [Viren reisen wie Dollarnoten](#) (Jan 26, 2006)
- ▶ Süddeutsche Zeitung, [Bewegte Erreger - Dollars und Viren - Die Wege von Geldnoten machen Epidemien berechenbar](#) (Jan 26, 2006)
- ▶ Frankfurter Allgemeine Zeitung, [Die Gesetze des Reisens](#) (Jan 26, 2006)
- ▶ Der Stern, [Dollars verraten Reisewege von Viren](#) (Jan 26, 2006)
- ▶ Die Welt, [Geldnoten zeigen Forschern Verbreitungswege von Erregern auf](#) (Jan 26, 2006)
- ▶ Das Handelsblatt, [Analyse der Reisewege von Geldscheinen erleichtert Seuchenprognose](#) (Jan 25, 2006)
- ▶ Spektrum der Wissenschaft, [Das Gesetz des Reisens](#) (pdf - Apr 2006)
- ▶ Ärztezeitung, [Markierte Dollarnoten erlauben Prognose von Seuchenausbreitung](#) (Jan 26, 2006)
- ▶ Informationsdienst Wissenschaft, [Auf den Spuren des Geldes: Durchbruch für die Vorhersage der Seuchenausbreitung](#) (Jan 25, 2006)

## 2004-05: The forecast of epidemics in globalized world

### Selected Television/Radio Coverage:

- ▶ ZDF heute, news feature (Oct. 2004)
- ▶ RTL Aktuell, news feature (Oct 20, 2004)
- ▶ SAT.1 News, news feature (Oct 23, 2004)
- ▶ SAT.1 Planetopia, science program feature (Sep 26, 2005)
- ▶ WDR Q21, science program feature (Dec 14, 2004)
- ▶ WDR Quarks & Co., science program feature (Oct 2005)

### Selected Press Coverage:

- ▶ Der Spiegel, [Wie eine Seuche die Welt überzieht](#) (Oct 19, 2004)
- ▶ Die Welt, [Neues Vorhersage-Modell für globale Seuchen](#) (Oct 20, 2004)
- ▶ Frankfurter Allgemeine Zeitung, [Vorhersagemodell über die Ausbreitung von Epidemien entwickelt](#) (Oct 19, 2004)
- ▶ Hamburger Abendblatt, [Modellrechnung für Seuchen](#) (Oct 20, 2004)
- ▶ GEO Magazin, [Mathematik: Mit SARS um die Welt](#) (Nov 7, 2004)
- ▶ Pro-Physik, [In 80 Tagen um die Welt: Epidemie-Vorhersagen auf der Basis von Flugpassagierströmen](#) (Oct 19, 2004)
- ▶ Vista Verde News, [Epidemien reisen per Flugzeug](#) (Oct 19, 2004)
- ▶ innovations-report, [In 80 Tagen um die Welt - wie sich Epidemien ausbreiten](#) (Oct 18, 2004)
- ▶ Informationsdienst Wissenschaft, [In 80 Tagen um die Welt: Epidemie-Vorhersagen auf der Basis von Flugpassagierströmen](#) (Oct 19, 2004)
- ▶ ScienceTicker, [Epidemien reisen per Flugzeug](#) (Oct 19, 2004)