

## CURRICULUM VITAE

Dr. Tanja Eisner

### Personal data

Birth name: Lobova  
Date of birth: 01.07.1980  
Place of birth: Kharkov, Ukraine  
Citizenship: Germany  
Postal address: Universität Leipzig  
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### Education

1997–2002 Studies at Kharkov National University  
Diploma in Applied Mathematics (with distinction)  
Advisor: Prof. Anna M. Vishnyakova  
Diploma thesis “On variation preserving operators”  
2003–2004 Studies at the University of Tübingen  
Diploma in Mathematics (with distinction)  
Advisor: Prof. Rainer Nagel  
Diploma thesis “Polynomially bounded semigroups”  
2005–2007 Ph.D. studies at the University of Tübingen  
Advisor: Prof. Rainer Nagel  
Thesis “Stability of operators and  $C_0$ -semigroups”  
June 2007 Ph.D. in Mathematics  
July 2010 Habilitation in Mathematics

## Positions

1.9.2013–now	Professor, University of Leipzig
1.1.2014–31.05.2017	guest researcher, University of Amsterdam
1.1.2011–31.12.2013	Assistant Professor, University of Amsterdam (1.9.–31.12.2013: on leave)
1.2.2009–31.12.2010	Scientific Assistant, University of Tübingen
01.07.–31.12.2007	Scientific Assistant, University of Tübingen

## Main Research Interests

- Functional analysis (semigroup theory, operator theory)
- Ergodic theory (ergodic theorems, connection with number theory)

## Publications: Books

33. Operator Theoretic Aspects of Ergodic Theory, Graduate Texts in Mathematics, 272, Springer, Cham, 2015, 628 pp. (with B. Farkas, M. Haase and R. Nagel)
32. Stability of Operators and Operator Semigroups, Operator Theory: Advances and Applications, Vol. 209. Birkhäuser Verlag, Basel, 2010, 204 pp.
31. Operator Theory, Function Spaces, and Applications, International Workshop on Operator Theory and Applications, Amsterdam, July 2014. Operator Theory: Advances and Applications, Birkhäuser Verlag, 2016. (with Birgit Jacob, André Ran, Hans Zwart (eds.))

## Publications: Papers and Preprints

30. *Nilsystems and ergodic averages along primes*, preprint. Ergodic Theory Dynam. Systems, to appear.
29. *Wiener's lemma along primes and other subsequences*, Adv. Math. **347** (2019), 340-383. (with Bálint Farkas and Christophe Cuny)

28. *Automatic sequences as good weights for ergodic theorems*, Discrete Contin. Dyn. Syst. **38** (2018), 4087–4115. (with Jakub Konieczny)
27. *On modulated ergodic theorems*, J. Nonlinear Var. Anal. **2** (2018), 131–154. (special issue dedicated to Simeon Reich). (with Michael Lin)
26. *On the pointwise entangled ergodic theorem*, J. Math. Anal. Appl. **449** (2017), 1754–1769. (with Dávid Kunszenti-Kovács)
25. *(Uniform) convergence of twisted ergodic averages*, Ergodic Theory Dynam. Systems **36** (2016), 2172–2202. (with Ben Krause)
24. *A polynomial version of Sarnak’s conjecture*, C. R. Math. Acad. Sci. Paris **353** (2015), 569–572.
23. *Linear sequences and weighted ergodic theorems*, Abstr. Appl. Anal. **2013** (2013), Article ID 815726, available at <http://dx.doi.org/10.1155/2013/815726>.
22. *Uniformity in the Wiener-Wintner theorem for nilsequences*, Discrete Contin. Dyn. Syst. **33** (2013) 3497-3516. (with Pavel Zorin-Kranich)
21. *On typical properties of Hilbert space operators*, Israel J. Math. **195** (2013), 247–281. (with Tamás Mátrai)
20. *On the entangled ergodic theorem*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. (5) **12** (2013), 141–156. (with Dávid Kunszenti-Kovács)
19. *Large values of the Gowers-Host-Kra seminorms*, J. Anal. Math. **117** (2012), 133–186. (with Terence Tao)
18. *Hilbertian Jamison sequences and rigid dynamical systems*, J. Funct. Anal. **261** (2011), 2013-2052. (with Sophie Grivaux)
17. *Nonconventional ergodic averages and multiple recurrence for von Neumann dynamical systems*, Pacific J. Math. **250** (2011), 1–60. (with Tim Austin and Terence Tao)
16. *A “typical” contraction is unitary*, Enseign. Math. (2) **56** (2010), 403-410.

15. *On the weak analogue of the Trotter-Kato theorem*, Taiwanese J. Math. **14** (2010), 1411–1416. (with András Serény)
14. *Embedding operators into strongly continuous semigroups*, Arch. Math. (Basel) **92** (2009), 451–460.
13. *Category theorems for stable semigroups*, Ergodic Theory Dynamical Systems **29** (2009), 487–494. (with András Serény)
12. *The growth of a  $C_0$ -semigroup characterised by its cogenerator*, J. Evol. Equ. **8** (2008), 749–764. (with Hans Zwart)
11. *Category theorems for stable operators on Hilbert spaces*, Acta Sci. Math. (Szeged) **74** (2008), 259–270. (with András Serény)
10. *The spectral mapping property of delay semigroups*, Compl. Anal. Oper. Theory **2** (2008), 273–283. (with András Bátkai and Yuri Latushkin)
9. *A note on polynomially growing  $C_0$ -semigroups*, Semigroup Forum **75** (2007), 438–445. (with Hans Zwart)
8. *Weakly and almost weakly stable  $C_0$ -semigroups*, Int. J. Dyn. Syst. Diff. Eq. **1** (2007), 44–57. (with Bálint Farkas, Rainer Nagel and András Serény)
7. *Continuous-time Kreiss resolvent condition on infinite-dimensional spaces*, Math. Comp. **75** (2006), 1971–1985. (with Hans Zwart)
6. *Polynomially bounded  $C_0$ -semigroups*, Semigroup Forum **70** (2005), 118–126.
5. *On entire functions having Taylor sections with only real zeros*, Mat. Fiz. Anal. Geom. **11** (2004), 449–469. (with Olga M. Katkova and Anna M. Vishnyakova)
4. *On power series having sections with only real zeros*, Comput. Methods Funct. Theory **3** (2003), 425–441. (with Olga M. Katkova and Anna M. Vishnyakova)
3. *On variation preserving operators*, Mat. Fiz. Anal. Geom. **10** (2003), 94–105.

## Publications: Papers in Proceedings

2. *Arithmetic progressions - an operator theoretic view*, Discrete Contin. Dyn. Syst. Series S, **6** (2013), 657–667. (with Rainer Nagel)
1. *Weak stability of orbits of  $C_0$ -semigroups on Banach spaces*. In H. Amann, W. Arendt, M. Hieber, F. Neubrander, S. Nicaise, J. von Below (eds), Functional Analysis and Evolution Equations. The Günter Lumer Volume (2007), 201-208. (with Bálint Farkas)

## Miscellaneous

0. Rigidity of contractions on Hilbert spaces, <http://arxiv.org/abs/0909.4695>. The results of this paper are published in Section IV.3 of “Stability of Operators and Operator Semigroups”, see Publications: Books.

## Selected Conferences

- 12/2018 Workshop on Sarnak’s Conjecture, AIM, San Jose
- 05/2018 Analysis Aspects of Dynamics, Imperial College London
- 04/2018 Probability, Analysis and Dynamics, Bristol
- 10/2017 Spectral Structures and Topological Methods in Mathematical Quasicrystals, Oberwolfach
- 07/2017 Real Analysis, Harmonic Analysis, and Applications, Oberwolfach
- 09/2015 Frontiers in Operator Dynamics, CIRM, Marseille
- 06/2015 Ergodic Theory and Combinatorics Conference (in honor of the 65th birthday of Vitaly Bergelson), Kristiansand
- 05/2015 Ergodic Theorems and Applications in Probability, Eilat
- 07/2014 Harmonic analysis and PDE, Hausdorff Institute, Bonn
- 06/2014 Dynamics and Numbers, Max Planck Institute, Bonn
- 05/2014 Harmonic Analysis and Partial Differential Equations, Hausdorff Trimester Program, Bonn
- 05/2014 Ergodic Theory and Dynamical Systems, Toruń
- 09/2013 International Workshop for Young Mathematicians “Ergodic Theory and Dynamical Systems”, Krakow (lecturer)
- 09/2013 European Women in Mathematics Meeting (plenary speaker),

- Bonn
- 10/2012 Ergodic Theory and Combinatorial Number Theory,  
Arbeitsgemeinschaft, Oberwolfach
  - 04/2012 Nederlands Mathematisch Congres, Eindhoven
  - 12/2011 Recent Advances in Modern Dynamics, University of Warwick
  - 01/2011 Workshop in honor of the 70th birthday of Rainer Nagel, Blaubeuren
  - 07/2010 21<sup>st</sup> International Workshop on Operator Theory and its  
Applications, TU Berlin
  - 09/2009 First Meeting on Asymptotics of Operator Semigroups, Oxford
  - 09/2008 Jahrestagung der Deutschen Mathematiker-Vereinigung,  
Erlangen
  - 04/2008 Workshop “Encounters between Discrete and Continuous  
Mathematics”, Blaubeuren
  - 12/2007 Evolution Equations: the State of the Art, Reisenburg
  - 09/2006 Jahrestagung der Deutschen Mathematiker-Vereinigung, Bonn
  - 07/2005 Positivity IV - Theory and Applications, Dresden
  - 06/2005 Harmonic Analysis and Partial Differential Equations, Kiel

### **Seminar and Colloquium Talks**

- 11/2018 University of Zürich, Switzerland
- 11/2018 Technical University of Kaiserslautern, Germany
- 06/2018 IMPAN Warsaw, Poland
- 04/2018 University of Jena, Germany
- 10/2017 University of Bremen, Germany
- 07/2017 Bergische Universität Wuppertal, Germany
- 05/2017 PH Vorarlberg, Feldkirch, Austria
- 01/2017 Free University of Berlin, Germany
- 10/2016 University of Jena, Germany
- 06/2016 University of Kiel, Germany
- 05/2016 University of Potsdam, Germany
- 11/2015 University of Tübingen, Germany
- 07/2015 University of Bielefeld, Germany
- 04/2015 Technical University of Dresden, Germany
- 04/2014 University of Jena, Germany
- 02/2014 California Institute of Technology, Pasadena, USA
- 01/2014 Max Planck Institute, Leipzig, Germany

11/2013 University of Tübingen, Germany  
06/2013 Bergische Universität Wuppertal, Germany  
05/2013 University of Twente, Netherlands  
05/2013 University of Bonn, Germany  
02/2013 Delft University of Technology, Netherlands  
11/2012 University of Bristol, England  
11/2012 University of Groningen, Netherlands  
09/2012 University of California, Los Angeles, USA  
07/2012 University of Tübingen, Germany  
06/2012 University of Zürich, Switzerland  
03/2012 Utrecht University, Netherlands  
02/2012 University of Warwick, England  
02/2012 University of Leipzig, Germany  
12/2011 Leiden University, Netherlands  
11/2011 Mathematical Sciences Research Institute, Berkeley, USA  
10/2011 University of California, Riverside, USA  
10/2011 University of Central Florida, USA  
10/2011 University of California, Los Angeles, USA  
07/2011 University of Darmstadt, Germany  
07/2011 University of Tübingen, Germany  
06/2011 Bergische Universität Wuppertal, Germany  
05/2011 Utrecht University, Netherlands  
05/2011 Ecole Polytechnique Fédérale de Lausanne, Switzerland  
05/2011 Vrije Universiteit Amsterdam, Netherlands  
02/2011 University of Amsterdam, Netherlands  
12/2010 University of Tübingen, Germany  
10/2010 University of California, Los Angeles, USA  
06/2010 Delft University of Technology, Netherlands  
06/2010 University of Amsterdam, Netherlands  
04/2010 University of California, Los Angeles, USA  
01/2010 Ecole Polytechnique Fédérale de Lausanne, Switzerland  
01/2010 University of Lille, France  
01/2010 University of Tübingen, Germany  
12/2009 University of Eichstätt, Germany  
10/2009 University of California, Los Angeles, USA  
06/2009 University of Marburg, Germany  
06/2009 University of Metz, France  
04/2009 University of California, Los Angeles, USA

09/2008 University of Memphis, USA  
 11/2007 University of Darmstadt, Germany  
 11/2007 University of Karlsruhe, Germany  
 10/2007 University of Salerno, University of Florence, Italy  
 04/2007 University of Toruń, Poland  
 03/2007 Eötvös Loránd University, Budapest, Hungary  
 11/2006 Scuola Normale Superiore di Pisa, Italy  
 11/2006 University of Karlsruhe, Germany  
 09/2006 University of Valladolid, Spain  
 05/2006 Eötvös Loránd University, Budapest, Hungary  
 05/2006 University of Darmstadt, Germany  
 03/2006 Louisiana State University, Baton Rouge, USA  
 02/2006 University of Missouri, Columbia, USA  
 05/2005 University of Bari, University of Lecce, Italy  
 01/2005 University of Ljubljana, Slovenia  
 10/2004 Eötvös Loránd University, Budapest, Hungary  
 08/2004 Kharkov National University, Ukraine

### Research Stays

2014, 6 weeks Hausdorff Institute, Max Planck Institute, Bonn  
 2009-14, 9 months University of California, Los Angeles, USA (host:  
 Terence Tao)  
 2009, 1 month University of Metz, France (host: Ralph Chill)  
 2006, 2 months University of Missouri, Columbia, USA (host: Yuri  
 Latushkin)

### Grants

2013 VIDI grant, 800.000 Euro, without acceptance possibility  
 because of leaving the Netherlands  
 2012–2015 NWO open competition grant (for one PhD student),  
 appr. 200.000 Euro  
 7/2008–6/2010 Young scientist project, University of Tübingen,  
 21.000 Euro



## Scholarships and Awards

- MacGillavry Fellowship
- Margarete von Wrangell fellowship, financed by the Ministry of Science, Research and the Arts of Baden-Württemberg
- Postdoctoral scholarship by Dr. Meyer–Struckmann–Stiftung (via Studienstiftung des deutschen Volkes)
- Best Ph.D. thesis (Promotionspreis) at Fakultät für Mathematik und Physik in 2006/07
- Ph.D. scholarship by Studienstiftung des deutschen Volkes

## Teaching

- Internet Seminar “Ergodic theorems” (2018/19), joint with Bálint Farkas (virtual co-lecturer)
- Undergraduate course “Analysis I” (2018/19, Leipzig)
- (Under)graduate course “Topology” (2018, Leipzig)
- Undergraduate course “Analysis for Computer Scientists” (2017/18, Leipzig)
- Graduate course (*Ringvorlesung*) “Geometry and dynamical systems” (MPI, Leipzig)
- Undergraduate course “Mathematics for Physicists I” (2016/17, Leipzig)
- Undergraduate course “Function Theory” (2016, Leipzig)
- Graduate course “Ergodic Theory II” (2014, 2015, 2016, 2017, Leipzig)
- Graduate course “Functional Analysis II” (2014, 2015, 2017, 2018, Leipzig)
- Undergraduate course “Mathematics for Physicists IV” (2014, Leipzig)

- Graduate course “Ergodic Theory I” (2013/14, 2014/15, 2015/16, 2016/17, Leipzig)
- Undergraduate course “Fourier Analysis” (2013/14, 2014/15, Leipzig)
- Graduate course “Ergodic Theory with a view towards Number Theory” (Spring 2012, 2013, Amsterdam)
- Undergraduate course “Linear Analysis” (Spring 2011, 2012, 2013 Amsterdam)
- Graduate course “Control theory” (2010/11, Tübingen)
- Graduate course “Operator Semigroups” (2010, Tübingen)
- Undergraduate course “Mathematics for Physicists I” (2009/10, Tübingen)
- Internet Seminar “Ergodic theory: an operator-theoretic approach” (2008/09), joint with Rainer Nagel, Bálint Farkas and Markus Haase (virtual co-lecturer)
- Graduate course “Functional Analysis” (2008/09, Tübingen)
- Graduate course “Linear Dynamical Systems” (2008, 2010, Tübingen)
- Graduate course “Asymptotics of Operator Semigroups” (2007/08, Tübingen)
- Seminar “Ergodic theory of group actions” (2017, Leipzig)
- Seminar “Function Theory and Analytic Number Theory” (2016/17, Leipzig)
- Seminar “Ergodic Theory and Number Theory” (2015, Leipzig)
- Seminar “Prime Numbers, Lie Groups, and Ergodic Theory” (2015, Leipzig)
- Seminar “Functional Analysis” (2009, 2009/10, 2010/11, Tübingen; 2013/14, 2014/15, Leipzig)
- Seminar “Operator Theory” (2007, 2007/08, 2008/09, Tübingen; 2015/16, 2017/18, 2018/19, Leipzig)

## Service/Miscellaneous

- Managing editor of *Journal of Analysis and Its Applications*
- Co-organizer of the IWOTA 2014 in Amsterdam
- Head of the study group “Encounters between Number Theory, Functional Analysis and Dynamical Systems”, Summer Academy 2018, Studienstiftung des deutschen Volkes
- Co-organizer of the  $n$ -City Seminar between Universities of Chemnitz, Dresden, Freiberg, and Leipzig (2014–now) and of the “Dynamics and Geometry” Seminar between Jena and Leipzig (2018–now)
- Co-organizer of Miniworkshops on Operator Theoretic Aspects of Ergodic Theory (Wuppertal, Delft, Leipzig, Feldkirch, Tübingen, 2016–now)
- Dean of Study, Institute of Mathematics, University of Leipzig (11/2016–now)

March 4, 2019