

## PERSONAL DETAILS

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*Born* 24th December 1983 in a suburb of Moscow  
*Citizenship* German and Russian  
*Languages* Bilingual in German and Russian, fluent in English, basic Italian  
*Address* SysMA Research Unit  
School for Advanced Studies Lucca  
Piazza San Francesco 19  
55100 Lucca, Italy  
*E-Mail* max.tschaikowski@imtlucca.it

## DEGREES

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**Ph.D. in Computer Science** June 2014

*Ludwig Maximilian University of Munich, Germany*

Supervisor: Prof. Mirco Tribastone, Ph.D.

Thesis Title: Fluid Aggregations for Markovian Process Algebra

Assessment: Magna Cum Laude

**Diplom in Mathematics with minors in Computer Science** August 2010

*Ludwig Maximilian University of Munich, Germany*

Supervisor: Prof. Dr. Hans-Dieter Donder

Thesis Title: Combinatorial Properties of Singular Cardinal Numbers

Assessment: Passed with Distinction

## RESEARCH INTERESTS

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- Construction, Reduction and Verification of Quantitative Models
- Approximation Techniques, Optimal Control Theory, Efficient Algorithms
- Chemical Reaction Networks, Process Algebra, Differential Equations, Stochastic Processes

## EMPLOYMENT

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**Assistant Professor (non-tenured)** 07/2015 - now

*IMT School for Advanced Studies Lucca, Italy*

**Research Fellow** 07/2014 - 06/2015

*University of Southampton, UK*

**Research Assistant** 10/2013 - 06/2014

*University of Southampton, UK*

**Research Assistant** 10/2010 - 09/2013

*Ludwig Maximilian University of Munich, Germany*

# PUBLICATIONS

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## Journals

- L. Cardelli, M. Tribastone, M. Tschaikowski, and A. Vandin. Maximal aggregation of polynomial dynamical systems. *Proceedings of the National Academy of Sciences (PNAS)*, 114(38):10029–10034, 2017. [Link](#)
- M. Tschaikowski and M. Tribastone. Spatial fluid limits for stochastic mobile networks. *Performance Evaluation (PEVA)*, 109:52–76, 2017
- L. Cardelli, A. Csikász-Nagy, N. Dalchau, M. Tribastone, and M. Tschaikowski. Noise Reduction in Complex Biological Switches. *Scientific reports*, 2016. [Link](#)
- M. Tschaikowski and M. Tribastone. Approximate reduction of heterogeneous nonlinear models with differential hulls. *IEEE Transactions in Automatic Control (TAC)*, 61(4):1099–1104, 2016
- M. Tschaikowski and M. Tribastone. A computational approach to steady-state convergence of fluid limits for Coxian queuing networks with abandonment. *Annals of Operations Research (AOR)*, 252(1):101–120, 2017
- M. Tschaikowski and M. Tribastone. A unified framework for differential aggregations in Markovian process algebra. *Journal of Logical and Algebraic Methods in Programming (JLAMP)*, 84(2):238 – 258, 2014
- M. Tschaikowski and M. Tribastone. Tackling continuous state-space explosion in a Markovian process algebra. *Theoretical Computer Science (TCS)*, 517:1–33, 2014
- M. Tschaikowski and M. Tribastone. Exact fluid lumpability in Markovian process algebra. *Theoretical Computer Science (TCS)*, 538:140 – 166, 2013

## Book Chapters

- L. Bulej, T. Bureš, I. Gerostathopoulos, V. Horký, J. Keznikl, L. Marek, M. Tschaikowski, M. Tribastone, and P. Tůma. *Software Engineering for Collective Autonomous Systems: The ASCENS Approach*, chapter Supporting Performance Awareness in Autonomous Ensembles, pages 291–322. Springer International Publishing, Cham, 2015

## Conferences

- Stefano Tognazzi, Mirco Tribastone, Max Tschaikowski, and Andrea Vandin. EGAC: a genetic algorithm to compare chemical reaction networks. In *Genetic and Evolutionary Computation Conference (GECCO)*, pages 833–840, 2017
- L. Cardelli, M. Tribastone, M. Tschaikowski, and A. Vandin. ERODE: A Tool for the Evaluation and Reduction of Ordinary Differential Equations. In *22nd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, 2017
- L. Bortolussi and M. Tschaikowski. Fluid Analysis of Spatio-Temporal Properties of Agents in a Population Model. In *23rd International Conference on Analytical & Stochastic Modelling Techniques & Applications (ASMTA)*, 2016
- L. Cardelli, M. Tribastone, M. Tschaikowski, and A. Vandin. Comparing chemical reaction networks: A categorical and algorithmic perspective. In *31th IEEE Symposium on Logic in Computer Science (LICS)*, 2016. [Link](#)
- L. Cardelli, M. Tribastone, M. Tschaikowski, and A. Vandin. Efficient syntax-driven lumping of differential equations. In *21st International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, 2016

- L. Cardelli, M. Tribastone, M. Tschaikowski, and A. Vandin. Symbolic computation of differential equivalences. In *43rd ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL)*, 2016. [Link](#)
- M. Kowal, M. Tschaikowski, M. Tribastone, and I. Schaefer. Scaling Size and Parameter Spaces in Variability-aware Software Performance Models. In *30th International Conference on Automated Software Engineering (ASE)*, 2015
- L. Cardelli, M. Tribastone, M. Tschaikowski, and A. Vandin. Forward and Backward Bisimulations for Chemical Reaction Networks. In *26th International Conference on Concurrency Theory (CONCUR)*, 2015
- M. Tschaikowski and M. Tribastone. A Partial-differential Approximation for Spatial Stochastic Process Algebra. In *VALUETOOLS*, 2014
- M. Tschaikowski and M. Tribastone. Insensitivity to Service-time Distributions for Fluid Queueing Models. In *VALUETOOLS*, 2013
- M. Tschaikowski and M. Tribastone. Exact fluid lumpability for Markovian process algebra. In *23rd International Conference on Concurrency Theory (CONCUR)*, 2012. [Link](#)
- M. Tschaikowski and M. Tribastone. Generalised Communication for Interacting Agents. In *9th International Conference on Quantitative Evaluation of Systems (QEST)*, 2012

#### Workshops

- M. Tschaikowski and M. Tribastone. Extended Differential Aggregations in Process Algebra for Performance and Biology. In *12th Quantitative Aspects of Programming Languages and Systems (QAPL)*, 2014
- M. Tschaikowski and M. Tribastone. Refined theory of packages. In *10th Workshop on Process Algebra and Stochastically Timed Activities (PASTA)*, 2011

## **CONFERENCE PRESENTATIONS AND INVITED TALKS**

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- Festschrift on the occasion of Kim Larsen's 60th birthday, Aalborg, Denmark, 2017
- Invited talk at the Logic Group of the University of Verona in 2016, Verona, Italy
- Invited talk at Microsoft Research in 2016, Cambridge, UK
- International Conference on Analytical & Stochastic Modelling Techniques & Applications (**ASMTA**) 2016, Cardiff, UK
- Symposium on Logic in Computer Science (**LICS**) 2016, New York City, NY, USA
- Symposium on Principles of Programming Languages (**POPL**) 2016, St. Petersburg, FL, USA
- International Conference on Automated Software Engineering (**ASE**) 2015, Lincoln, NE, USA
- International Conference on Performance Evaluation Methodologies and Tools (**VALUETOOLS**) 2014, Bratislava, Slovakia
- Invited talk at the Modelling and Simulation group in 2014, University of Saarland, Germany
- European Conference on Queueing Theory (**ECQT**), 2014, Ghent, Belgium
- International Conference on Performance Evaluation Methodologies and Tools (**VALUETOOLS**) 2013, Turin, Italy
- Invited talk at the PEPA group in 2013, University of Edinburgh, UK
- International Conference on Concurrency Theory (**CONCUR**) 2012, Newcastle upon Tyne, UK
- International workshop on Process Algebras and Stochastically Timed Activities (**PASTA**) 2011, Ragusa, Italy