Philipp Haller

hallerp@gmail.com   http://www.csc.kth.se/~phaller/

Interests	Programming languages, type systems, concurrent and distributed programming	

Professional Experience	**KTH Royal Institute of Technology, Sweden** *School of Electrical Engineering and Computer Science* Assistant professor (tenure track)	2014 – present
	Typesafe, Switzerland Consultant and software engineer	2012 – 2014
	Stanford University, USA *Department of Electrical Engineering* Post-doctoral fellow	2011 – 2012
	EPFL, Switzerland *School of Computer and Communication Sciences* Post-doctoral researcher Research assistant	2011 – 2012 2006 – 2010

Degrees & Education	**KTH Royal Institute of Technology, Sweden** Docent in Computer Science	June 2018
	EPFL, Switzerland Doctor of Science in Computer Science Advisor: Martin Odersky Thesis title: "Isolated Actors for Race-free Concurrent Programming"	2006 – 2010
	Karlsruhe Institute of Technology, Germany Dipl.-Inform. in Computer Science, awarded highest distinction	2001 – 2006

Awards and Nominations

Awards & Nominations	• Foreign Researcher Scholarship *Wenner-Gren Foundation*	2016 – 2018
	• Teacher of the Year *School of Computer Science and Communication, KTH*	2016
	• Nomination for EPFL Doctorate Award *School of Computer and Communication Sciences, EPFL*	2010
	• Prize of Excellence (exceptional teaching contribution) *School of Computer and Communication Sciences, EPFL*	2008

Awards and Nominations (continued)

- Best Student Paper Award   2007
  9th International Conference Coordination Models and Languages
- e-fellows Scholarship   2004 – 2010
  Deutsche Telekom AG and McKinsey & Company
- Full Scholarship   2001 – 2006
  German Academic Scholarship Foundation (German: Studienstiftung des deutschen Volkes)
- Karls-Preis (exceptional social contribution)   2000
  Karls-Gymnasium Stuttgart, Germany

Keynotes and Invited Talks

Invited talks & lectures

- Invited Talk: Max Planck Institute for Software Systems, February 2018, Germany
- **Keynote:** Entwicklertag Frankfurt, February 2018, Germany
- Invited Lecture: TU Darmstadt, January 2018, Germany
- **Keynote:** ACM SIGPLAN International Workshop on Software Engineering for Parallel Systems, October 2017, Canada
- Invited Talk: Swedish Multicore Day, December 2016, Sweden
- Invited Talk: Northeastern University, September 2016, USA
- Invited Talk: Scala World, September 2016, UK
- Invited Talk: ECOOP Doctoral Symposium, July 2016, Italy
- Invited Lecture: TU Darmstadt, May 2016, Germany
- **Keynote:** parallel conference, April 2016, Germany
- Invited Talk: ACM SPLASH Doctoral Symposium, October 2015, USA
- **Keynote:** ACM SPLASH ETX Workshop, October 2015, USA
- Invited Talk: Vrije Universiteit Brussel, December 2014, Belgium
- Invited Talk: ECOOP Summer School, July 2014, Sweden
- Invited Talk: ACM SPLASH-I Series, October 2013, USA
- Invited Talk: Skills Matter, December 2012, UK
- Invited Talk: Scala eXchange, November 2012, UK
- **Keynote:** ACM SIGPLAN AGERE Workshop, October 2012, USA
- Invited Talk: Scalathon, July 2011, USA
- Invited Talk: Saarland University, May 2009, Germany
- Invited Talk: Universität Freiburg, November 2008, Germany
- Invited Talk: IT University of Copenhagen, June 2008, Denmark
- **Dagstuhl Seminars** (including seminars 16402, 17051)

Funding Awarded

European Social Fund (ESF)   2018 – 2021
co-PIs M. Wiggberg and F. Golchin, 966,195 EUR

Marianne och Marcus Wallenbergs Stiftelse   2016 – 2018
co-PI M. Wiggberg, 206,155 EUR

Swiss CTI   2014 – 2016
co-PI M. Odersky, 388,522 EUR

Doctoral Thesis Committee Member

1. Quentin Stiévenart, Vrije Universiteit Brussel, 2018
2. Elias Castegren (committee stand-in), Uppsala University, 2018
3. Alejandro Marzinotto (committee stand-in), KTH, 2017
4. Johan Östlund, Uppsala University, 2016
5. Joeri De Koster, Vrije Universiteit Brussel, 2014

Teaching Experience

Teaching
Experience

KTH Royal Institute of Technology, Sweden   2015 – 2018
Course responsible, examiner, and lecturer
- Compiler construction, 9.0 ECTS credits
  (Spring 2015, 2016, 2017, Fall 2017, 2018)
  In addition to a full lecture series, students develop a complete compiler
  including an individual compiler extension as a course project.
- Principles of Programming Languages, 7.5 ECTS credits
  (Spring 2018)

UPMARC Multicore Computing Summer School   2011
Invited lecturer
Designed and taught a series of lectures for graduate students on
multicore programming in Scala. A majority of the lectures were based on
libraries and frameworks that I developed as part of my graduate work.

International Summer School on Trends in Concurrency   2008
Lecturer
Helped design and teach a series of lectures for graduate students on
concurrent programming in Scala using actors and joins. All lectures were
based on my graduate research projects.

EPFL, Switzerland   2006 – 2009
Teaching Assistant, Prof. Martin Odersky
Duties as head teaching assistant included shared administrative
responsibilities with faculty instructor, fielding of all student inquiries,
and oversight of student teaching assistants.
- Compiler Construction, Fall 2006, Fall 2007
- Advanced Programming, Spring 2007, Fall 2007 (head TA)

- Foundations of Software (M.Sc. level), Fall 2008 (head TA)
- Foundations of Software (M.Sc. level), Fall 2009 (sole TA)
  - Designed new student project using the Coq proof assistant

Publication List

Publications

Statistics: Google Scholar reports 15 papers cited at least 15 times each.
See **http://scholar.google.com/citations?user=sDt5PL4AAAAJ**

Refereed Journals and Conference Proceedings

SCALA 2018
- Olof Karlsson and Philipp Haller. "Extending Scala with Records: Design, Implementation, and Evaluation." *Proceedings of the 9th ACM SIGPLAN International Scala Symposium*, 2018, to appear.

EC-TEL 2018
- Richard Glassey, Philipp Haller, and Mattias Wiggberg. "Agile and Adaptive Learning via the ECK-model in the Software Development Academy." *Proceedings of the 13th European Conference for Technology-Enhanced Learning*, 2018, to appear.

JFP 2018
- Philipp Haller, Heather Miller, and Normen Müller. "A Programming Model and Foundation for Lineage-based Distributed Computation." *Journal of Functional Programming* 28 (2018).

OOPSLA 2016
- Philipp Haller and Alex Loiko. "LaCasa: Lightweight Affinity and Object Capabilities in Scala." *Proceedings of the 2016 ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications*, 2016. (Google Scholar: ***15 citations***)

Onward! 2016
- Heather Miller, Philipp Haller, Normen Müller, Jocelyn Boullier, and Jorge Vicente Cantero. "Function Passing: A Model for Typed, Distributed Functional Programming." *Proceedings of the 2016 ACM International Symposium on New Ideas, New Paradigms, and Reflections on Programming and Software,* 2016. (Google Scholar: ***5 citations***)

SCALA 2016
- Philipp Haller, Simon Geries, Michael Eichberg, and Guido Salvaneschi. "Reactive Async: Expressive Deterministic Concurrency." *Proceedings of the 2016 ACM SIGPLAN International Scala Symposium*, 2016.

ECOOP 2014
- Heather Miller, Philipp Haller, and Martin Odersky. "Spores: A Type-Based Foundation for Closures in the Age of Concurrency and Distribution." *Proceedings of the 28th European Conference on Object-Oriented Programming,* 2014. (Google Scholar: ***20 citations***)

ICSE 2014
- Heather Miller, Philipp Haller, Lukas Rytz, and Martin Odersky. "Functional Programming For All! Scaling a MOOC for Students and Professionals Alike." *Proceedings of the 36th International Conference on Software Engineering, Software Engineering Education and Training (SEET) Track*, 2014. (Google Scholar: ***15 citations***)

OOPSLA 2013
- Heather Miller, Philipp Haller, Eugene Burmako, and Martin Odersky. "Instant Pickles: Generating Object-Oriented Pickler Combinators for Fast and Extensible Serialization." *Proceedings of the 27th ACM SIGPLAN*

	International Conference on Object Oriented Programming Systems Languages & Applications, 2013. (Google Scholar: ***30 citations***)
ECOOP 2012	• Lukas Rytz, Martin Odersky, and Philipp Haller. "Lightweight Polymorphic Effects." *Proceedings of the 26th European Conference on Object-Oriented Programming,* 2012. (Google Scholar: ***43 citations***)
HOSC 2012	• Tiark Rompf, Adriaan Moors, Nada Amin, Philipp Haller, and Martin Odersky. "Scala-Virtualized: Linguistic Reuse for Deep Embeddings." *Higher-Order and Symbolic Computation,* Vol. 25, No. 1, March 2012. (Google Scholar: ***37 citations***)
ECOOP 2010	• Philipp Haller and Martin Odersky. "Capabilities for Uniqueness and Borrowing." *Proceedings of the 24th European Conference on Object-Oriented Programming,* 2010. (Google Scholar: ***100 citations***)
TCS 2009	• Philipp Haller and Martin Odersky. "Scala Actors: Unifying Thread-based and Event-based Programming." *Theoretical Computer Science,* Vol. 410, No. 2, February 2009. (Google Scholar: ***385 citations***) Significantly extended version of the COORDINATION'07 paper below.
COORDINATION 2008	• Philipp Haller and Tom Van Cutsem. "Implementing Joins Using Extensible Pattern Matching." *Proceedings of the 10th International Conference on Coordination Models and Languages,* 2008. (Google Scholar: ***51 citations***)
COORDINATION 2007	• Philipp Haller and Martin Odersky. "Actors that Unify Threads and Events." *Proceedings of the 9th International Conference on Coordination Models and Languages,* 2007. (***Best Student Paper Award***) The above paper has also been featured on Lambda the Ultimate, and in articles on IBM developerWorks, and DZone (more than **70,000 hits!**)
JMLC 2006	• Philipp Haller and Martin Odersky. "Event-based Programming Without Inversion of Control." *Proceedings of the 7th Joint Modular Languages Conference,* 2006. (Google Scholar: ***137 citations***) The above paper has also been featured on Lambda the Ultimate (more than **20,000 hits!**), and in an article on IBM developerWorks.

Refereed Workshops (Excluding Short Versions of Papers Above)

PLACES 2017	• Philipp Haller and Fredrik Sommar. "An Empirical Study of Affine Types for Isolated Actors in Scala." *10th Workshop on Programming Language Approaches to Concurrency- and Communication-cEntric Software (PLACES '17),* 2017.
PLACES 2017	• Philipp Haller and Ludvig Axelsson. "Quantifying and Explaining Immutability in Scala." *10th Workshop on Programming Language Approaches to Concurrency- and Communication-cEntric Software (PLACES '17),* 2017.
ProWeb 2017	• Lucas Wiener, Tomas Ekholm, and Philipp Haller. "Modular Responsive Web Design: An Experience Report." *International Workshop on Programming Technology for the Future Web (ProWeb '17),* 2017.

NWPT 2015	• Philipp Haller and Heather Miller. "A Formal Model for Direct-style Asynchronous Observables." *27th Nordic Workshop on Programming Theory (NWPT '15)*, 2015.
AGERE! 2015	• Gianluca Stivan, Andrea Peruffo, and Philipp Haller. "Akka.js: Towards a portable actor runtime environment." *5th ACM SIGPLAN International Workshop on Programming based on Actors, Agents and Decentralized Control (AGERE! '15)*, 2015.
SCALA 2014	• Aleksandar Prokopec, Philipp Haller, and Martin Odersky. "Containers and Aggregates, Mutators and Isolates for Reactive Programming." *5th Annual Workshop on Scala (SCALA@ECOOP '14)*, 2014
REM 2013	• Philipp Haller and Heather Miller. "RAY: Integrating Rx and Async for Direct-style Reactive Streams." *ACM SPLASH Workshop on Reactivity, Events and Modularity*, 2013.
LCPC 2012	• Aleksandar Prokopec, Heather Miller, Tobias Schlatter, Philipp Haller, and Martin Odersky. "FlowPools: A Lock-free Deterministic Concurrent Dataflow Abstraction." *25th International Workshop on Languages and Compilers for Parallel Computing*, 2012. (Google Scholar: ***26 citations***) Published in *Revised Selected Papers of the 25th International Workshop on Languages and Compilers for Parallel Computing, Lecture Notes in Computer Science, Vol. 7760*, 2013.
Big Learning 2011	• Heather Miller, Philipp Haller, and Martin Odersky. "Tools and Frameworks for Big Learning in Scala: Leveraging the Language for High Productivity and Performance." *NIPS Workshop on Parallel and Large-scale Machine Learning*, 2011.
SCALA 2011	• Philipp Haller and Heather Miller. "Parallelizing Machine Learning – Functionally: A Framework and Abstractions for Parallel Graph Processing." *2nd Scala Workshop*, 2011. (Google Scholar: ***19 citations***)
CAP 2010	• Philipp Haller. "Static Debugging of Programs Using High-level Concurrency Libraries." *ACM SPLASH Workshop on Concurrency for the Application Programmer*, 2010. Position Paper.
SCALA 2010	• Philipp Haller. "Lightweight Language Support for Type-based, Concurrent Event Processing." *1st Scala Workshop*, 2010.

Invited Papers

AGERE! 2012	• Philipp Haller. "On the Integration of the Actor Model in Mainstream Technologies: The Scala Perspective." *Proceedings of the 2nd International Workshop on Programming based on Actors, Agents, and Decentralized Control*, 2012. (Google Scholar: ***44 citations***)

Books

• Philipp Haller and Frank Sommers. "Actors in Scala." *Artima*, 2011 (Google Scholar: ***49 citations***)

Other Work (Unrefereed)

- Michel Schinz and Philipp Haller. "A Scala Tutorial for Java Programmers." *Scala Website (scala-lang.org)*. This popular tutorial has been translated to Spanish, Korean, German, Italian, and Chinese.

Research Students Supervised

- Ph.D. student (co-supervisor), since 08/2018, Viktor Palmkvist, KTH
- Ph.D. student, since 09/2016, Xin Zhao, KTH
- M.Sc. thesis, since 02/2018, Ellen Arvidsson, "Concurrent Determinism Using Lattices and the Object Capability Model," KTH
- M.Sc. thesis, since 02/2018, Daniel Schlaug, "A single-state architecture for industry-scale, highly modularised, pure-function front-end applications," EVRY
- B.Sc. thesis, 02/2018 to 08/2018, Mikael Blomstrand, "Constraining future extensions of immutable classes," KTH
- M.Sc. thesis, 09/2016 to 10/2017, Ludvig Axelsson, "Immutability: An Empirical Study in Scala," KTH
- M.Sc. thesis, 01/2017 to 08/2017, Erik Reimers, "Lightweight Software Isolation via Flow-Sensitive Capabilities in Scala," KTH
- M.Sc. thesis, 01/2017 to 07/2017, Olof Karlsson, "Record Types in Scala: Design and Evaluation," KTH
- M.Sc. thesis, 01/2017 to 07/2017, Patrik Ackland, "Fast and Scalable Static Analysis using Deterministic Concurrency," KTH
- M.Sc. thesis, since 09/2016, Fredrik Sommar, "An Empirical Study of Affine Types for Isolated Actors in Scala," KTH
- M.Sc. thesis, 01/2016 to 06/2016, Simon Geries, "Safety and efficiency of new abstractions for reactive, asynchronous programming," KTH
- M.Sc. thesis, 01/2016 to 06/2016, Johan Stenberg, "Snapple: A distributed, fault-tolerant, in-memory key-value store using Conflict-Free Replicated Data Types," KTH
- M.Sc. thesis, 09/2015 to 06/2016, Alexandre Loiko, "Type Systems for Uniqueness and Borrowing," KTH
- M.Sc. thesis, 01/2015 to 09/2015, Lucas Wiener, "ELQ: Extensible Element Queries for Modular Responsive Web Components," KTH
- M.Sc. thesis, 02/2014 to 01/2015, Alon Dolev (external student of Erik Meijer), "Scalable Join-Pattern Matching for Observables," TU Delft
- M.Sc. level, 09/2013 to 01/2014, Louis Bliss, "Incremental Picklers for Scala Pickling," co-supervision with Heather Miller, EPFL
- M.Sc. level, 09/2012 to 01/2013, Tobias Schlatter, "FlowSeqs: Barrier-Free ParSeqs," co-supervision with Heather Miller and Aleksandar Prokopec, EPFL
- M.Sc. level, 02/2012 to 06/2012, Tobias Schlatter, "Multi-Lane FlowPools," co-supervision with Heather Miller and Aleksandar Prokopec, EPFL

- M.Sc. level, 02/2012 to 06/2012, Pierre Grydbeck, "Parallel Machine Learning: An Expectation Maximization Algorithm for Gaussian Mixture Models," co-supervision with Heather Miller, EPFL
- B.Sc. level, 02/2012 to 06/2012, Bruno Studer, "Parallel Machine Learning: Collaborative Filtering via Alternating Least Squares," co-supervision with Heather Miller, EPFL
- M.Sc. level, 09/2011 to 01/2012, Eric Zbinden, "Natural Language Programming Analysis in Scala," co-supervision with Philippe Suter, IBM Research
- M.Sc. level, 09/2011 to 01/2012, Stanislav Peshterliev, "Parallel Natural Language Processing Algorithms in Scala," co-supervision with Heather Miller, EPFL
- M.Sc. level, 09/2011 to 01/2012, Florian Gysin, "Improving Parallel Graph Processing through the Introduction of Parallel Collections," co-supervision with Heather Miller, EPFL
- M.Sc. thesis, 09/2011 to 03/2012, Christophe Pache, "Distribution of Workflows using an Actor Model Framework," EPFL
- M.Sc. level, 02/2011 to 06/2011, Georges Discry, "Extending the Menthor Framework for Parallel Graph Processing to Distributed Computing," co-supervision with Heather Miller, EPFL
- M.Sc. level, 02/2009 to 06/2009, Rémi Bonnet, "Alias Tracking through Capabilities," EPFL
- B.Sc. level, 09/2007 to 01/2008, Antoine Yersin, "Scala AIO: New Facilities on top of Java NIO Programming," EPFL
- M.Sc. level, 09/2007 to 01/2008, Federico Marmori, "Remote Actors for Distributed Programming," EPFL
- M.Sc. level, 09/2007 to 01/2008, Thibaud Hottelier, "A Flexible Regular Expression Library for Scala," EPFL
- M.Sc. level, 09/2007 to 01/2008, Thomas Hofer, "Comet-style Web Applications in Scala," EPFL

External Service

Editorial Board, Computer Languages, Systems and Structures, International Journal, Elsevier (since 08/2015)

Program Committee Memberships

Program Committees		
	SEFM 2018:	16th Int'l Conference on Software Engineering and Formal Methods
	ESOP 2018:	27th European Symposium on Programming
	ProWeb 2018:	2nd Int'l Workshop on Programming Technology for the Future Web
	<Programming> 2018:	Int'l Conference on the Art, Science, and Engineering of Programming
	Scala 2017:	8th ACM SIGPLAN Int'l Scala Symposium

Program Co-Chair

GPCE 2017:	16th Int'l Conference on Generative Programming: Concepts & Experience
IWACO 2017:	8th Int'l Workshop on Aliasing, Capabilities & Ownership
ECOOP 2017:	European Conference on Object-Oriented Programming, **Artifact Evaluation Committee Co-Chair**, PC member
CC 2017:	26th International Conference on Compiler Construction
FSEN 2017:	7th Int'l Conf. on Fundamentals of Software Engineering
PLACES 2017:	Programming Language Approaches to Concurrency- and Communication-cEntric Software (ETAPS), **Co-Chair**
SCALA 2016:	7th ACM SIGPLAN Int'l Scala Symposium
AGERE! 2016:	6th ACM SIGPLAN Int'l Workshop on Programming based on Actors, Agents, and Decentralized Control (SPLASH) **Co-Chair**
REBLS 2016:	ACM SPLASH Workshop on Reactive and Event-based Languages & Systems
PMLDC 2016:	1st Workshop on Programming Models and Languages for Distributed Computing (ECOOP)
ECOOP 2016:	European Conference on Object-Oriented Programming
REBLS 2015:	ACM SPLASH Workshop on Reactive and Event-based Languages & Systems
SPLASH 2015:	ACM SPLASH Doctoral Symposium
AGERE! 2015:	5th ACM SIGPLAN Int'l Workshop on Programming based on Actors, Agents, and Decentralized Control (SPLASH) **Co-Chair**
SCALA 2015:	6th ACM SIGPLAN Int'l Scala Symposium, **Co-Chair**
AGERE! 2014:	4th ACM SIGPLAN Int'l Workshop on Programming based on Actors, Agents, and Decentralized Control (SPLASH) **Co-Chair**
REBLS 2014:	Workshop on Reactive and Event-based Languages & Systems (SPLASH)
SCALA 2014:	5th Workshop on Scala (ECOOP), **Co-Chair**
PLPV 2014:	ACM SIGPLAN Workshop on Programming Languages meets Program Verification (POPL)
AGERE! 2013:	3rd Int'l Workshop on Programming based on Actors, Agents, and Decentralized Control (SPLASH)
REM 2013:	Workshop on Reactivity, Events and Modularity (SPLASH)
ECOOP 2013:	European Conference on Object-Oriented Programming
SCALA 2013:	4th Workshop on Scala (ECOOP), **Co-Chair**
ACME 2013:	Workshop on ACadeMics Tooling with Eclipse (ECOOP)
AGERE! 2012:	2nd Int'l Workshop on Programming based on Actors, Agents, and Decentralized Control (SPLASH)
LaME 2012:	International Workshop on Languages for the Multi-core Era (ECOOP)

External Visibility

Industry Presentations

- *Chaos Engineering Day*, December 2017, Stockholm, Sweden
- *Scala Days 2017*, June 2017, Copenhagen, Denmark
- *Scala Days 2016*, June 2016, Berlin, Germany
- *Scala Days 2015*, June 2015, Amsterdam, Netherlands
- *Scala Days 2014*, June 2014, Berlin, Germany
- *Strange Loop 2013*, September 2013, St. Louis, USA
- *Scala Days 2013*, June 2013, New York City, USA
- *Emerging Technologies for the Enterprise,* April 2013, Philadelphia, USA
- *Boston Area Scala Enthusiasts*, August 2012, MIT, Boston, USA
- *JavaOne 2009*, June 2009, San Francisco, USA
- *IBM Development Lab Böblingen*, May 2007, Böblingen, Germany

Memberships

Memberships

Professional Member, ACM
Member, ACM SIGPLAN
Member, German Informatics Society (GI)
Member, EPFL Alumni