Sebastian **Litzinger**

Postdoctoral Researcher · Computer Science

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Education

FernUniversität in Hagen — *Hagen, Germany*
PhD in Computer Science — *2023*

FernUniversität in Hagen — *Hagen, Germany*
MSc in Practical Computer Science — *2018*

Eberhard Karls Universität Tübingen — *Tübingen, Germany*
MA in Philosophy — *2015*

Heythrop College, University of London — *London, UK*
Erasmus Programme Participant — *2010-2011*

Universität Hamburg — *Hamburg, Germany*
BA in Philosophy — *2009*

Professional Experience

2025– **Postdoctoral Researcher**, Department of Computer and Information Science, Linköpings Universitet, Sweden
2018–2025 **Research Assistant**, Parallelism & VLSI Group, FernUniversität in Hagen, Germany
2015–2018 **Research Assistant**, Chair of Operations Research, FernUniversität in Hagen, Germany
2013–2014 **Teaching Assistant**, Department of Philosophy, Eberhard Karls Universität Tübingen, Germany
2008–2009 **Teaching Assistant**, Department of Philosophy, Universität Hamburg, Germany

Publications

Theses

S. Litzinger. Raising Energy Efficiency and Fault Tolerance with Parallel Streaming Application Scheduling on Multicore Systems. FernUniversität in Hagen. 2023.

Journal Articles

C. Heßeling, **S. Litzinger**, J. Keller. Archive-based Covert Channel in Sensor Streaming Data. Journal of Universal Computer Science 30(8): 1048–1067. 2024.

S. Litzinger, J. Keller, C. Kessler. Packing Multiple Types of Cores for Energy-Optimized Heterogeneous Hardware-Software Co-Design of Moldable Streaming Computations. IEEE Access 11: 19301–19311. 2023.

J. Keller, **S. Litzinger**, C. Kessler. Integrating Energy-Optimizing Scheduling of Moldable Streaming Tasks with Design Space Exploration for Multiple Core Types on Configurable Platforms. Journal of Signal Processing Systems 94: 849–864. 2022.

J. Keller, **S. Litzinger**. Systematic Search Space Design for Energy-Efficient Static Scheduling of Moldable Tasks. Journal of Parallel and Distributed Computing 162: 44–58. 2022.

W. Rödder, A. Dellnitz, **S. Litzinger**. Combining efficiency and scaling effects in activity analysis: towards an improved best practice criterion. RAIRO-Operations Research 56(2): 795–812. 2022.

S. Litzinger, J. Keller. Effects of Continuous vs Discrete Frequency Scaling and Core Allocation on Energy Efficiency of Static Schedules for Moldable Tasks. Parallel Processing Letters 32.01n02, 2150025:1–22. 2022.

S. Litzinger, J. Keller. Code generation for energy-efficient execution of dynamic streaming task graphs on parallel and heterogeneous platforms. Concurrency and Computation: Practice and Experience 34.2, e6072:1–19. 2022.

W. Rödder, A. Dellnitz, **S. Litzinger**. Analysing terrorist networks – An entropy-driven method. Expert Systems 39(10), e12720:1–13. 2022.

C. Kessler, **S. Litzinger**, J. Keller. Crown-scheduling of sets of parallelizable tasks for robustness and energy-elasticity on many-core systems with discrete dynamic voltage and frequency scaling. Journal of Systems Architecture 115, 101999:1–16. 2021.

C. Kessler, **S. Litzinger**, J. Keller. Static Scheduling of Moldable Streaming Tasks With Task Fusion for Parallel Systems With DVFS. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems 39(11): 4166–4178. 2020.

W. Rödder, A. Dellnitz, I. Gartner, **S. Litzinger**. Weight Prediction on Missing Links in Social Networks – a Cross-Entropy-Based Approach. Journal of Applied Logics 6(1): 83–104. 2019.

W. Rödder, A. Dellnitz, F. Kulmann, **S. Litzinger**, E. Reucher. Bipartite Structures in Social Networks: Traditional versus Entropy-Driven Analyses. Entropy 21(3): 277:1–17. 2019.

Conference & Workshop Articles

S. Khosravi, **S. Litzinger**, C. Kessler, J. Keller. Quality-Aware Energy-Efficient Scheduling of Moldable-Parallel Streaming Computations on Heterogeneous Multicore CPUs with DVFS. Accepted at the 28th Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP). 2025.

J. Keller, **S. Litzinger**. Hiding Information in Short Network Packets. Accepted at the 2025 European Interdisciplinary Cybersecurity Conference (EICC). 2025.

S. Khosravi, C. Kessler, **S. Litzinger**, J. Keller. Energy-Efficient Scheduling of Moldable Streaming Computations for the Edge-Cloud Continuum. Proceedings of the 9th IEEE International Conference on Fog and Mobile Edge Computing (FMEC). 2024.

M. Boulasikis, C. Kessler, F. Gruian, J. Keller, **S. Litzinger**. Packet-Type Aware Scheduling of Moldable Streaming Tasks on Multicore Systems with DVFS. Proceedings of the 39th ACM/SIGAPP Symposium On Applied Computing (SAC). 2024.

S. Litzinger. Heuristic Scheduling of Streaming Applications for Energy Efficiency on Heterogeneous Multicores. Proceedings of the 25th IEEE International Conference on High Performance Computing & Communications (HPCC). 2023.

C. Heßeling, J. Keller, **S. Litzinger**. Reversible Network Covert Channel by Payload Modulation in Streams of Decimal Sensor Values. Proceedings of the 19th IEEE International Conference on e-Science (e-Science). 2023.

C. Heßeling, J. Keller, **S. Litzinger**. Network Steganography Through Redundancy in Higher-Radix Floating-Point Representations. Proceedings of the 17th International Conference on Availability, Reliability and Security (ARES). 2022.

C. Heßeling, J. Keller, **S. Litzinger**. Kleptography in Authentication Protocols: Why is it Still Possible? Proceedings of the 2022 European Interdisciplinary Cybersecurity Conference (EICC). 2022.

J. Keller, **S. Litzinger**. Energy-Efficient Execution of Streaming Task Graphs with Parallelizable Tasks on Multicore Platforms with Core Failures. Proceedings of the 2021 European Conference on Parallel Processing Workshops (Euro-Par Workshops). 2022.

C. Kessler, J. Keller, **S. Litzinger**. Temperature-Aware Energy-Optimal Scheduling of Moldable Streaming Tasks onto 2D-Mesh-Based Many-Core CPUs with DVFS. Proceedings of the 24th Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP). 2021.

J. Keller, **S. Litzinger**, C. Kessler. Combining Design Space Exploration with Task Scheduling of Moldable Streaming Tasks on Reconfigurable Platforms. Proceedings of the 17th International Symposium on Applied Reconfigurable Computing (ARC). 2021.

S. Litzinger, J. Keller. Generating Energy-Efficient Code for Parallel Applications Specified by Streaming Task Graphs with Dynamic Elements. Proceedings of the 11th International Workshop on Programming Models and Applications for Multicores and Manycores (PMAM). 2020.

S. Litzinger, J. Keller, C. Kessler. Maximizing Profit in Energy-Efficient Moldable Task Execution with Deadline. Proceedings of the 28th Euromicro International Conference on Parallel, Distributed and Network-Based Processing (PDP). 2020.

C. Kessler, **S. Litzinger**, J. Keller. Robustness and Energy-elasticity of Crown Schedules for Sets of Parallelizable Tasks on Many-core Systems with DVFS. Proceedings of the 28th Euromicro International Conference on Parallel, Distributed and Network-Based Processing (PDP). 2020.

C. Kessler, **S. Litzinger**, J. Keller. Adaptive Crown Scheduling for Streaming Tasks on Many-Core Systems with Discrete DVFS. Proceedings of the 2019 European Conference on Parallel Processing Workshops (Euro-Par Workshops). 2020.

S. Litzinger, J. Keller. Influence of Discretization of Frequencies and Processor Allocation on Static Scheduling of Parallelizable Tasks with Deadlines. PARS-Mitteilungen 35. 2020.

S. Litzinger, J. Keller, C. Kessler. Scheduling Moldable Parallel Streaming Tasks on Heterogeneous Platforms with Frequency Scaling. Proceedings of the 27th European Signal Processing Conference (EUSIPCO). 2019.

S. Litzinger, O. Körber, J. Keller. Reducing Energy Consumption of HMAC Applications on Heterogeneous Platforms. Proceedings of the 17th International Conference on High Performance Computing & Simulation (HPCS). 2019.

J. Keller, **S. Litzinger**, W. Spitzer. Probabilistic Runtime Guarantees for Statically Scheduled Taskgraphs with Stochastic Task Runtimes. Proceedings of the 17th International Conference on High Performance Computing & Simulation (HPCS). 2019.

S. Litzinger, A. Klos, W. Schiffmann. Compute-Efficient Neural Network Architecture Optimization by a Genetic Algorithm. Proceedings of the 8th International Conference on Artificial Neural Networks (ICANN). 2019.

Working Papers

J. Keller, **S. Litzinger**. Influence of Incremental Constraints on Energy Consumption and Static Scheduling Time for Moldable Tasks with Deadline. Presented at the 13th International Workshop on Programmability and Architectures for Heterogeneous Multicores. 2020.

Awards

2024 **Award for best scientific achievement of a junior researcher in 2023 (for my PhD dissertation)**, Faculty of Mathematics and Computer Science, FernUniversität in Hagen

Presentations

Conference & Workshop Talks

Fast Compression of Floating-Point Values with Exponent/Mantissa Shuffling, 30th PARS Workshop 2024, Ingolstadt, Germany.

Heuristic Scheduling of Streaming Applications for Energy Efficiency on Heterogeneous Multicores, HPCC 2023, Melbourne, Australia.

Reversible Network Covert Channel by Payload Modulation in Streams of Decimal Sensor Values, eScience 2023, Limassol, Cyprus.

Network Steganography Through Redundancy in Higher-Radix Floating-Point Representations, CUING @ ARES 2022, Vienna, Austria.

Energy-Efficient Execution of Streaming Task Graphs with Parallelizable Tasks on Multicore Platforms with Core Failures, Resilience @ Euro-Par 2021, Lisbon, Portugal (online).

Temperature-Aware Energy-Optimal Scheduling of Moldable Streaming Tasks onto 2D-Mesh-Based Many-Core CPUs with DVFS, JSSPP @ IPDPS 2021, Portland, USA (online).

Energy-Efficient Execution of Streaming Task Graphs with Parallelizable Tasks on Multicore Platforms with Core Failures, DKFT Workshop 2021 (online).

Maximizing Profit in Energy-Efficient Moldable Task Execution with Deadline, PDP 2020, Västerås, Sweden (online).

Generating Energy-Efficient Code for Parallel Applications Specified by Streaming Task Graphs with Dynamic Elements, PMAM @ PPoPP 2020, San Diego, USA.

Influence of Incremental Constraints on Energy Consumption and Static Scheduling Time for Moldable Tasks with Deadline, MULTIPROG @ HiPEAC 2020, Bologna, Italy.

Fault-Tolerant and Energy-Efficient Static Schedules for Multi-Variant Programs, DKFT Workshop 2019, Dortmund, Germany.

Energy-efficient scheduling of stream processing applications with dynamic tasks, 4th German-Russian Summer School 2019, Saarbrücken, Germany.

Adaptive crown scheduling for streaming tasks on many-core systems with discrete DVFS, Auto-DaSP @ Euro-Par 2019, Göttingen, Germany.

Probabilistic Runtime Guarantees for Statically Scheduled Taskgraphs with Stochastic Task Runtimes, HiPMiC @ HPCS 2019, Dublin, Ireland.

Reducing Energy Consumption of HMAC Applications on Heterogeneous Platforms, APPMM @ HPCS 2019, Dublin, Ireland.

Influence of Discretization of Frequencies and Processor Allocation on Static Scheduling of Parallelizable Tasks with Deadlines, 28th PARS Workshop 2019, Berlin, Germany.

Other Talks

Challenges in Scheduling Parallel Streaming Applications on Multicore Systems, Faculty Award Ceremony 2024, FernUniversität in Hagen, Germany.

Energy-efficient Task Scheduling for Parallel Systems, Science Spring 2023, Leibniz-FH Hanover, Germany.

Poster Presentations

Kleptography in Authentication Protocols: Why is it Still Possible?, EICC 2022, Barcelona, Spain.

Compute-efficient neural network architecture optimization by a genetic algorithm, ICANN 2019, Munich, Germany.

Service to the Scientific Community

Reviewing and Subreviewing

Euro-Par 2025

ESORICS 2025

ESORICS 2024

Journal of Universal Computer Science

The Journal of Supercomputing

APADeMaL 2022

Applied Sciences

Petri Nets 2021

Journal of Ambient Intelligence and Humanized Computing

Future Generation Computer Systems

EUSIPCO 2019

Conferences and Workshops

Web Chair, AsHES @ IPDPS 2021