

Publications Daniel Merkle (December 2016)

International Journals (peer reviewed)

- [1] Andersen, Jakob L., Christoph Flamm, **Daniel Merkle** and Peter F. Stadler: *An Intermediate Level of Abstraction for Computational Systems Chemistry*. Philosophical Transactions of the Royal Society A, 2017. to be published.
- [2] Andersen, J. L., C. Flamm, **D. Merkle** and P. F. Stadler: *In silico Support for Eschenmoser's Glyoxylate Scenario*. Israel Journal of Chemistry, 55(8):919–933, 2015. preprint: <http://arxiv.org/abs/1502.07555>.
- [3] **Merkle, D.**, M. Middendorf and A. Scheidler: *Task Allocation in Organic Computing Systems: Networks with Reconfigurable Helper Units*. International Journal of Autonomous and Adaptive Communications Systems, 8(1):60–80, 2015.
- [4] Andersen, J. L., C. Flamm, **D. Merkle** and P. F. Stadler: *Generic Strategies for Chemical Space Exploration*. International Journal of Computational Biology and Drug Design, 7((2/3)):225–258, 2014. preprint: <http://arxiv.org/abs/1302.4006>.
- [5] Andersen, J. L., T. Andersen, C. Flamm, M. M. Hanczyc, **D. Merkle**, and P. F. Stadler: *Navigating the Chemical Space of HCN Polymerization and Hydrolysis: Guiding Graph Grammars by Mass Spectrometry Data*. Entropy, 15(10):4066–4083, 2013. Open access at <http://www.mdpi.com/1099-4300/15/10/4066>.
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- [11] **Merkle, D.**, Martin Middendorf and Nicolas Wieseke: *A Parameter-Adaptive Dynamic Programming Approach for Inferring Cophylogenies*. BMC Bioinformatics, 11(S-1):60, 2010.
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- [14] Bernt, M., **D. Merkle** and M. Middendorf: *Solving the Preserving Reversal Median Problem*. IEEE/ACM Transactions on Computational Biology and Bioinformatics, 5(3): 332-347, 2008.
- [15] Perseke, M., Fritzsche, G., K. Ramsch, M. Bernt, **D. Merkle**, M. Middendorf, D. Bernhard, P.F. Stadler and M. Schlegel: *Evolution of Mitochondrial Gene Orders in Echinoderms*. Molecular Phylogenetics and Evolution, 47: 855–864, 2008.
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- [26] **Merkle, D.** and C. Blum: *Swarm Intelligence – An Optimization-based Introduction*. Künstliche Intelligenz, 4:5–10, 2005.
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- [29] **Merkle, D.** and M. Middendorf: *On Solving Permutation Scheduling Problems with Ant Colony Optimization*. International Journal of Systems Science, 36(5):255–266, 2005.

- [30] **Merkle, D.** and M. Middendorf: *Dynamic Polyethism and Competition for Tasks in Threshold Reinforcement Models of Social Insects*. *Adaptive Behavior*, 12:251–262, 2004. preliminary version in [68].
- [31] Janson, S., **D. Merkle**, M. Middendorf, H. ElGindy and H. Schmeck: *On Enforced Convergence of ACO and its Implementation on the Reconfigurable Mesh Architecture Using Size Reduction Tasks*. *Journal of Supercomputing*, 26(3): 221-238,2003. preliminary version in [73].
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- [33] **Merkle, D.**, M. Middendorf and H. Schmeck: *Ant Colony Optimization for Resource-Constrained Project Scheduling*. *IEEE Transactions on Evolutionary Computation*, 6(4):333–346, 2002.
- [34] **Merkle, D.** and M. Middendorf: *Fast Ant Colony Optimization on Runtime Reconfigurable Processor Arrays*. *Genetic Programming and Evolvable Machines*, 3(4):345–361, 2002.
- [35] **Merkle, D.** and Th. Worsch *Formal Language Recognition by Stochastic Cellular Automata*. *Fundamenta Informaticae*, 52(1-3):183–201, 2002.
- [36] **Merkle, D.** and M. Middendorf: *An Ant Algorithm with Global Pheromone Evaluation for Scheduling a Single Machine*. *Applied Intelligence*, 18(1):105–111, 2002.

Publications in Conference Proceedings (peer reviewed)

- [37] Andersen, J. L., C. Flamm, **D. Merkle** and P. F. Stadler: *A Software Package for Chemically Inspired Graph Transformation*. In *Graph Transformation - 9th International Conference (ICGT 2016)*, volume 9761 of *Lecture Notes in Computer Science*, pages 73–88. Springer, 2016. preprint: <http://arxiv.org/abs/1603.02481>.
- [38] Flamm, C., **D. Merkle**, P. F. Stadler and U. Thorsen: *Automatic Inference of Graph Transformation Rules Using the Cyclic Nature of Chemical Reactions*. In *Graph Transformation - 9th International Conference (ICGT 2016)*, volume 9761 of *Lecture Notes in Computer Science*, pages 206–222. Springer, 2016. preprint: <http://arxiv.org/abs/1604.06379>
- [39] Andersen, J. L., C. Flamm, **D. Merkle** and P. F. Stadler: *50 Shades of Rule Composition - From Chemical Reactions to Higher Levels of Abstraction*. In *Proceedings of the 1st International Conference on Formal Methods in Macro-Biology (FMMB)*, volume 8738 of *Lecture Notes in Computer Science*, pages 117–135. Springer, 2014.
- [40] Hargreaves, F., **D. Merkle** and P. Schneider-Kamp: *Group Communication Patterns for High Performance Computing in Scala*. In *Proceedings of the 3rd ACM SIGPLAN Workshop on Functional High-Performance Computing (FHPC)*, pages 75–85, 2014. preprint: <http://arxiv.org/abs/1406.6163>.
- [41] Andersen, J. L., C. Flamm, Hanczyc M.M. and **D. Merkle**: *Towards an Optimal DNA-Templated Molecular Assembler*. In *Proceedings of 14th International Conference on Artificial Life (ALIFE)*, pages 557–564. MIT Press, 2014. Open access: <http://mitpress.mit.edu/sites/default/files/titles/content/alife14/ch090.html>.
- [42] Hargreaves, F. P. and **D. Merkle**: *FooPar: A Functional Object Oriented Parallel Framework in Scala*. In *Proc. of the 10th International Conference on Parallel Processing and Applied Mathematics (PPAM)*, volume 8385 of *Lecture Notes in Computer Science*, pages 118–129. Springer, 2013. Technical Report : <http://arxiv.org/abs/1304.2550>.
- [43] Flamm, C., C. Hemmingsen and **D. Merkle**: *Barrier Trees for Metabolic Adjustment Landscapes*. In *Proc. of the 12th European Conference on Artificial Life (ALIFE)*, pages 1151–1158, 2013.

- [44] Fagerberg, R., C. Flamm, **D. Merkle** and P. Peters: *Exploring Chemistry Using SMT*. In *Proceeding of the 18th International Conference on Principles and Practice of Constraint Programming (CP 2012)*, volume 7514 of *Lecture Notes in Computer Science*, pages 900–915. Springer, 2012.
- [45] Bernt, M., M.-C. Chen, **D. Merkle**, H.-L. Wang, K.-M. Chao and M. Middendorf: *Finding All Sorting Tandem Duplication Random Loss Operations*. In *Proc. 2009 of the 20th Annual Symposium on Combinatorial Pattern Matching (CPM 2009)*, volume 5577 in *Lecture Notes in Computer Science (LNCS)*, pages 301–313, Springer, Berlin, 2009
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- [50] Brutschy, A., A. Scheidler, **D. Merkle** and M. Middendorf: *Learning from House-Hunting Ants: Collective Decision-Making in Organic Computing Systems*. In *Proc. of the 6th International Conference on Ant Colony Optimization and Swarm Intelligence (ANTS 2008)*, volume 5217 in *Lecture Notes in Computer Science (LNCS)*, pages 96–107. Springer, Berlin, 2008. [This paper won the paper award at ANTS 2008.](#)
- [51] Scheidler, A., C. Blum, **D. Merkle** and M. Middendorf: *Emergent Sorting in Networks of Router Agents*. In *Proc. of the 6th International Conference on Ant Colony Optimization and Swarm Intelligence (ANTS 2008)*, volume 5217 in *Lecture Notes in Computer Science (LNCS)*, pages 299–306. Springer, Berlin, 2008.
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Editorials

- [84] Klemm, K., **D. Merkle** and E. Olbrich: *Editorial: Artificial Life*. *Advances in Complex Systems*, 12(3), 2009.
- [85] Doerner, K.F., **D. Merkle** and T. Stützle: *Special Issue on Ant Colony Optimization*. *Swarm Intelligence*, 3(1):1–2, 2009.

Books (edited)

- [86] Banzhaf, W., C. Flamm, **D. Merkle** and P.F. Stadler (editors): *Report from Dagstuhl Seminar 14452: Algorithmic Cheminformatics*, 2015.
- [87] Blum, C. and **D. Merkle** (editors): 群智能：介与用 (Swarm Intelligence - Introduction and Application, Chinese Translation). Chinese publisher: National Defense Industry Press with permission from Springer, 2011.
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Book Chapters (peer reviewed)

- [91] Bernt, M., **D. Merkle**, M. Middendorf, B. Schierwater, M. Schlegel and P. F. Stadler: *Computational Methods for the Analysis of Mitochondrial Genome Rearrangements*, Deep Metazoan Phylogeny The Backbone of the Tree of Life, pages 515–529. De Gruyter, 2014.
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Book Review

- [100] **Merkle, D.** and M. Middendorf: *Book Review on “Ant Colony Optimization” by M. Dorigo, T. Stützle*. *European Journal of Operations Research*, 168(1):269–271, 2005.