

Probabilistic Model Checking - References

References

- [APLS08] Alessandro Abate, Maria Prandini, John Lygeros, and Shankar Sastry. Probabilistic reachability and safety for controlled discrete time stochastic hybrid systems. *Automatica*, 44(11):2724–2734, 2008.
- [AHL05] H. Aljazzar, H. Hermanns, and S. Leue. Counterexamples for timed probabilistic reachability. In P. Pettersson and W. Yi, editors, *Proc. 3rd International Conference on Formal Modelling and Analysis of Timed Systems (FORMATS'05)*, volume 3829 of *LNCS*, pages 177–195. Springer, 2005.
- [ACD93] R. Alur, C. Courcoubetis, and D. Dill. Model checking in dense real time. *Information and Computation*, 104(1):2–34, 1993.
- [AD94] R. Alur and D. Dill. A theory of timed automata. *Theoretical Computer Science*, 126:183–235, 1994.
- [AH99] R. Alur and T. Henzinger. Reactive modules. *Formal Methods in System Design*, 15(1):7–48, 1999.
- [ADI06b] Rajeev Alur, Thao Dang, and Franjo Ivancic. Predicate abstraction for reachability analysis of hybrid systems. *ACM Trans. Embedded Comput. Syst.*, 5(1):152–199, 2006.
- [AHK03] S. Andova, H. Hermanns, and J.-P. Katoen. Discrete-time rewards model-checked. In *Proc. Formal Modeling and Analysis of Timed Systems (FORMATS'03)*, volume 2791 of *LNCS*, pages 88–104. Springer, 2003.
- [ASSB00] A. Aziz, K. Sanwal, V. Singhal, and R. Brayton. Model-checking continuous time Markov chains. *ACM Transactions on Computational Logic*, 1(1):162–170, 2000.
- [ASB+95] A. Aziz, V. Singhal, F. Balarin, R. Brayton, and A. Sangiovanni-Vincentelli. It usually works: The temporal logic of stochastic systems. In P. Wolper, editor, *Proc. 7th International Conference on Computer Aided Verification (CAV'95)*, volume 939 of *LNCS*, pages 155–165. Springer, 1995.
- [BGC04] C. Baier, M. Groesser, and F. Ciesinski. Partial order reduction for probabilistic systems. In *Proc. 1st International Conference on Quantitative Evaluation of Systems (QEST'04)*, pages 230–239. IEEE CS Press, 2004.
- [BHHK03] C. Baier, B. Haverkort, H. Hermanns, and J.-P. Katoen. Model-checking algorithms for continuous-time Markov chains. *IEEE Transactions on Software Engineering*, 29(6):524–541, 2003.
- [BK08] C. Baier and J.-P. Katoen. *Principles of Model Checking*. MIT Press, 2008.
- [BK98] C. Baier and M. Kwiatkowska. Model checking for a probabilistic branching time logic with fairness. *Distributed Computing*, 11(3):125–155, 1998.

- [BCM+05] R. Barbuti, S. Cataudella, A. Maggiolo-Schettini, P. Milazzo, and A. Troina. A probabilistic model for molecular systems. *Fundamenta Informaticae*, 67(1-3):13–27, 2005.
- [BT91] D. Bertsekas and J. Tsitsiklis. An analysis of stochastic shortest path problems. *Mathematics of Operations Research*, 16(3):580–595, 1991.
- [BP05] M. Bhargava and C. Palamidessi. Probabilistic anonymity. In *Proc. 16th International Conference on Concurrency Theory (CONCUR’05)*, volume 3653 of *LNCS*, pages 171–185. Springer, 2005.
- [BdA95] A. Bianco and L. de Alfaro. Model checking of probabilistic and nondeterministic systems. In P. Thiagarajan, editor, *Proc. 15th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS’95)*, volume 1026 of *LNCS*, pages 499–513. Springer, 1995.
- [BFLM11] P. Bouyer, U. Fahrenberg, K. Larsen, and N. Markey. Quantitative analysis of real-time systems using priced timed automata. *Communications of the ACM*, 54(9):78–87, 2011.
- [Bry86] R. Bryant. Graph-based algorithms for Boolean function manipulation. *IEEE Transactions on Computers*, C-35(8):677–691, 1986.
- [CVGO06] M. Calder, V. Vyshemirsky, D. Gilbert, and R. Orton. Analysis of signalling pathways using continuous time Markov chains. *Transactions on Computational Systems Biology VI*, 4220:44–67, 2006.
- [CKPS11] T. Chen, M. Kwiatkowska, D. Parker, and A. Simaitis. Verifying team formation protocols with probabilistic model checking. In *Proc. 12th International Workshop on Computational Logic in Multi-Agent Systems (CLIMA XII 2011)*, volume 6814 of *LNCS*, pages 190–297. Springer, 2011.
- [Che06] L. Cheung. *Reconciling Nondeterministic and Probabilistic Choices*. Ph.D. thesis, Radboud University of Nijmegen, 2006.
- [CY88] C. Courcoubetis and M. Yannakakis. Verifying temporal properties of finite state probabilistic programs. In *Proc. 29th Annual Symposium on Foundations of Computer Science (FOCS’88)*, pages 338–345. IEEE Computer Society Press, 1988.
- [CY95] C. Courcoubetis and M. Yannakakis. The complexity of probabilistic verification. *Journal of the ACM*, 42(4):857–907, 1995.
- [DGV99] M. Daniele, F. Giunchiglia, and M. Vardi. Improved automata generation for linear temporal logic. In N. Halbwachs and D. Peled, editors, *Proc. 11th International Conference on Computer Aided Verification (CAV’99)*, volume 1633 of *LNCS*, pages 249–260. Springer, 1999.
- [DJJL01] P. D’Argenio, B. Jeannet, H. Jensen, and K. Larsen. Reachability analysis of probabilistic systems by successive refinements. In L. de Alfaro and S. Gilmore, editors, *Proc. 1st Joint International Workshop on Process Algebra and Probabilistic Methods, Performance Modelling and Verification (PAPM/PROBMIV’01)*, volume 2165 of *LNCS*, pages 39–56. Springer, 2001.
- [DN04] P. D’Argenio and P. Niebert. Partial order reduction on concurrent probabilistic programs. In *Proc. 1st International Conference on Quantitative Evaluation of Systems (QEST’04)*. IEEE CS Press, 2004.

- [DKN02] C. Daws, M. Kwiatkowska, and G. Norman. Automatic verification of the IEEE 1394 root contention protocol with KRONOS and PRISM. In R. Cleaveland and H. Garavel, editors, *Proc. 7th International Workshop on Formal Methods for Industrial Critical Systems (FMICS'02)*, volume 66.2 of *Electronic Notes in Theoretical Computer Science*. Elsevier, 2002.
- [dA97a] L. de Alfaro. *Formal Verification of Probabilistic Systems*. Ph.D. thesis, Stanford University, 1997.
- [dAHJ01] L. de Alfaro, T. Henzinger, and R. Jhala. Compositional methods for probabilistic systems. In K. Larsen and M. Nielsen, editors, *Proc. 12th International Conference on Concurrency Theory (CONCUR'01)*, volume 2154 of *LNCS*, pages 351–365. Springer, 2001.
- [dAKN+00] L. de Alfaro, M. Kwiatkowska, G. Norman, D. Parker, and R. Segala. Symbolic model checking of probabilistic processes using MTBDDs and the Kronecker representation. In S. Graf and M. Schwartzbach, editors, *Proc. 6th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'00)*, volume 1785 of *LNCS*, pages 395–410. Springer, 2000.
- [DHS03] S. Derisavi, H. Hermanns, and W. Sanders. Optimal state-space lumping in Markov chains. *Information Processing Letters*, 87(6):309–315, September 2003.
- [DP03] J. Desharnais and P. Panangaden. Continuous stochastic logic characterizes bisimulation of continuous-time markov processes. *Journal of Logic and Algebraic Programming*, 56(1-2):99–115, 2003.
- [Dil89] D. Dill. Timing assumptions and verification of finite-state concurrent systems. In J. Sifakis, editor, *Proc. Automatic Verification Methods for Finite State Systems*, volume 407 of *LNCS*, pages 197–212. Springer, 1990.
- [DM06] A. Donaldson and A. Miller. Symmetry reduction for probabilistic model checking using generic representatives. In S. Graf and W. Zhang, editors, *Proc. 4th Int. Symp. Automated Technology for Verification and Analysis (ATVA'06)*, volume 4218 of *Lecture Notes in Computer Science*, pages 9–23. Springer, 2006.
- [DKNP06] M. Dufлот, M. Kwiatkowska, G. Norman, and D. Parker. A formal analysis of Bluetooth device discovery. *Int. Journal on Software Tools for Technology Transfer*, 8(6):621–632, 2006.
- [DKN+10] M. Dufлот, M. Kwiatkowska, G. Norman, D. Parker, S. Peyronnet, C. Picaronny, and J. Sproston. *FMICS Handbook on Industrial Critical Systems*, chapter Practical Applications of Probabilistic Model Checking to Communication Protocols, pages 133–150. IEEE Computer Society Press, 2010. To appear.
- [EKVY07] K. Etessami, M. Kwiatkowska, M. Vardi, and M. Yannakakis. Multi-objective model checking of Markov decision processes. In O. Grumberg and M. Huth, editors, *Proc. 13th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'07)*, volume 4424 of *LNCS*, pages 50–65. Springer, 2007.
- [EGL85] S. Even, O. Goldreich, and A. Lempel. A randomized protocol for signing contracts. *Communications of the ACM*, 28(6):637–647, 1985.
- [FKP10] L. Feng, M. Kwiatkowska, and D. Parker. Compositional verification of probabilistic systems using learning. In *Proc. 7th International Conference on Quantitative Evaluation of SysTems (QEST'10)*, pages 133–142. IEEE CS Press, 2010.

- [FKNP11] V. Forejt, M. Kwiatkowska, G. Norman, and D. Parker. Automated verification techniques for probabilistic systems. In M. Bernardo and V. Issarny, editors, *Formal Methods for Eternal Networked Software Systems (SFM'11)*, volume 6659 of *LNCS*, pages 53–113. Springer, 2011.
- [FKN+11] V. Forejt, M. Kwiatkowska, G. Norman, D. Parker, and H. Qu. Quantitative multi-objective verification for probabilistic systems. In P. Abdulla and K. Leino, editors, *Proc. 17th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'11)*, volume 6605 of *LNCS*, pages 112–127. Springer, 2011.
- [FKP12] V. Forejt, M. Kwiatkowska, and D. Parker. Pareto curves for probabilistic model checking. In S. Chakraborty and M. Mukund, editors, *Proc. 10th International Symposium on Automated Technology for Verification and Analysis (ATVA'12)*, volume 7561 of *LNCS*, pages 317–332. Springer, 2012.
- [FHH+11] Martin Fränzle, Ernst Moritz Hahn, Holger Hermanns, Nicolás Wolovick, and Lijun Zhang. Measurability and safety verification for stochastic hybrid systems. In *HSCC*, pages 43–52. 2011.
- [Frehse05] Goran Frehse. Phaver: Algorithmic verification of hybrid systems past hytech. In *HSCC*, pages 258–273. 2005.
- [Fru06] M. Fruth. Probabilistic model checking of contention resolution in the IEEE 802.15.4 low-rate wireless personal area network protocol. In *Proc. 2nd International Symposium on Leveraging Applications of Formal Methods, Verification and Validation (ISOLA'06)*. 2006.
- [GNB+06] M. Größer, G. Norman, C. Baier, F. Ciesinski, M. Kwiatkowska, and D. Parker. On reduction criteria for probabilistic reward models. In S. Arun-Kumar and N. Garg, editors, *Proc. 25th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS'06)*, volume 4337 of *LNCS*, pages 309–320. Springer, 2006.
- [HHWZ10b] E. M. Hahn, H. Hermanns, B. Wachter, and L. Zhang. PASS: Abstraction refinement for infinite probabilistic models. In J. Esparza and R. Majumdar, editors, *Proc. 16th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'10)*, volume 6105 of *LNCS*, pages 353–357. Springer, 2010.
- [HH13] Ernst Moritz Hahn and Holger Hermanns. Rewarding probabilistic hybrid automata. In *HSCC*, pages 313–322. 2013.
- [HK07] T. Han and J.-P. Katoen. Counterexamples in probabilistic model checking. In O. Grumberg and M. Huth, editors, *Proc. 13th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'07)*, volume 4424 of *LNCS*, pages 72–86. Springer, 2007.
- [HK07b] T. Han and J.-P. Katoen. Providing evidence of likely being on time: Counterexample generation for CTMC model checking. In *Proc. 5th International Symposium on Automated Technology for Verification and Analysis (ATVA'07)*, volume 4762 of *LNCS*, pages 331–346. Springer, 2007.
- [HJ94] H. Hansson and B. Jonsson. A logic for reasoning about time and reliability. *Formal Aspects of Computing*, 6(5):512–535, 1994.
- [HHK00] B. Haverkort, H. Hermanns, and J.-P. Katoen. On the use of model checking techniques for dependability evaluation. In *Proc. 19th IEEE Symposium on Reliable Distributed Systems (SRDS'00)*, pages 228–237. Erlangen, Germany, October 2000.

- [HKN+06] J. Heath, M. Kwiatkowska, G. Norman, D. Parker, and O. Tymchyshyn. Probabilistic model checking of complex biological pathways. In C. Priami, editor, *Proc. Computational Methods in Systems Biology (CMSB'06)*, volume 4210 of *Lecture Notes in Bioinformatics*, pages 32–47. Springer Verlag, 2006.
- [HMP92] T. Henzinger, Z. Manna, and A. Pnueli. What good are digital clocks? In W. Kuich, editor, *Proc. 19th International Colloquium on Automata, Languages and Programming (ICALP'92)*, volume 623 of *LNCS*, pages 545–558. Springer, 1992.
- [HH94] Thomas A. Henzinger and Pei-Hsin Ho. Hytech: The cornell hybrid technology tool. In *Hybrid Systems*, pages 265–293. 1994.
- [HLS00] Jianghai Hu, John Lygeros, and Shankar Sastry. Towards a theory of stochastic hybrid systems. In *HSCC*, pages 160–173. 2000.
- [KKZJ07] J.-P. Katoen, T. Kemna, I. Zapreev, and D. Jansen. Bisimulation minimisation mostly speeds up probabilistic model checking. In O. Grumberg and M. Huth, editors, *Proc. 13th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'07)*, volume 4424 of *LNCS*, pages 87–101. Springer, 2007.
- [KKNP09] M. Kattenbelt, M. Kwiatkowska, G. Norman, and D. Parker. Abstraction refinement for probabilistic software. In N. Jones and M. Muller-Olm, editors, *Proc. 10th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI'09)*, volume 5403 of *LNCS*, pages 182–197. Springer, 2009.
- [KKNP10] M. Kattenbelt, M. Kwiatkowska, G. Norman, and D. Parker. A game-based abstraction-refinement framework for Markov decision processes. *Formal Methods in System Design*, 36(3):246–280, 2010.
- [KSK76] J. Kemeny, J. Snell, and A. Knapp. *Denumerable Markov Chains*. Springer-Verlag, 2nd edition, 1976.
- [KNP06b] M. Kwiatkowska, G. Norman, and D. Parker. Game-based abstraction for Markov decision processes. In *Proc. 3rd International Conference on Quantitative Evaluation of Systems (QEST'06)*, pages 157–166. IEEE CS Press, 2006.
- [KNP06a] M. Kwiatkowska, G. Norman, and D. Parker. Symmetry reduction for probabilistic model checking. In T. Ball and R. Jones, editors, *Proc. 18th International Conference on Computer Aided Verification (CAV'06)*, volume 4114 of *LNCS*, pages 234–248. Springer, 2006.
- [KNP07a] M. Kwiatkowska, G. Norman, and D. Parker. Stochastic model checking. In M. Bernardo and J. Hillston, editors, *Formal Methods for the Design of Computer, Communication and Software Systems: Performance Evaluation (SFM'07)*, volume 4486 of *LNCS (Tutorial Volume)*, pages 220–270. Springer, 2007.
- [KNP09c] M. Kwiatkowska, G. Norman, and D. Parker. Stochastic games for verification of probabilistic timed automata. In J. Ouaknine and F. Vaandrager, editors, *Proc. 7th International Conference on Formal Modelling and Analysis of Timed Systems (FORMATS'09)*, volume 5813 of *LNCS*, pages 212–227. Springer, 2009.
- [KNP10b] M. Kwiatkowska, G. Norman, and D. Parker. A framework for verification of software with time and probabilities. In K. Chatterjee and T. Henzinger, editors, *Proc. 8th International Conference on Formal Modelling and Analysis of Timed Systems (FORMATS'10)*, volume 6246 of *LNCS*, pages 25–45. Springer, 2010.

- [KNPQ10] M. Kwiatkowska, G. Norman, D. Parker, and H. Qu. Assume-guarantee verification for probabilistic systems. In J. Esparza and R. Majumdar, editors, *Proc. 16th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'10)*, volume 6105 of *LNCS*, pages 23–37. Springer, 2010.
- [KNPS06] M. Kwiatkowska, G. Norman, D. Parker, and J. Sproston. Performance analysis of probabilistic timed automata using digital clocks. *Formal Methods in System Design*, 29:33–78, 2006.
- [KNSS02] M. Kwiatkowska, G. Norman, R. Segala, and J. Sproston. Automatic verification of real-time systems with discrete probability distributions. *Theoretical Computer Science*, 282:101–150, 2002.
- [KNS01b] M. Kwiatkowska, G. Norman, and J. Sproston. Symbolic computation of maximal probabilistic reachability. In K. Larsen and M. Nielsen, editors, *Proc. 13th International Conference on Concurrency Theory (CONCUR'01)*, volume 2154 of *LNCS*, pages 169–183. Springer, 2001.
- [KNS03b] M. Kwiatkowska, G. Norman, and J. Sproston. Probabilistic model checking of deadline properties in the IEEE 1394 FireWire root contention protocol. *Formal Aspects of Computing*, 14(3):295–318, 2003.
- [KNSW04] M. Kwiatkowska, G. Norman, J. Sproston, and F. Wang. Symbolic model checking for probabilistic timed automata. In Y. Lakhnech and S. Yovine, editors, *Proc. Joint Conference on Formal Modelling and Analysis of Timed Systems and Formal Techniques in Real-Time and Fault Tolerant Systems (FORMATS/FTRTFT'04)*, volume 3253 of *LNCS*, pages 293–308. Springer, 2004.
- [KNSW07] M. Kwiatkowska, G. Norman, J. Sproston, and F. Wang. Symbolic model checking for probabilistic timed automata. *Information and Computation*, 205(7):1027–1077, 2007.
- [LPH14b] B. Lacerda, D. Parker, and N. Hawes. Optimal and dynamic planning for markov decision processes with co-safe ltl specifications. In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'14)*. IEEE, 2014.
- [LHP06] R. Lassaigne, T. Héroult, and S. Peyronnet. Approximate verification of discrete and continuous time Markov chains. In *Proc. 3rd International Conference on Quantitative Evaluation of Systems (QEST'06)*. IEEE CS Press, 2006. To appear.
- [Meh04b] R. Mehmood. *Disk-based techniques for efficient solution of large Markov chains*. Ph.D. thesis, University of Birmingham, 2004.
- [NSY92] X. Nicollin, J. Sifakis, and S. Yovine. Compiling real-time specifications into extended automata. *IEEE Transactions on Software Engineering*, 18(9):794–804, 1992.
- [NPK+05] G. Norman, D. Parker, M. Kwiatkowska, S. Shukla, and R. Gupta. Using probabilistic model checking for dynamic power management. *Formal Aspects of Computing*, 17(2):160–176, 2005.
- [NS06] G. Norman and V. Shmatikov. Analysis of probabilistic contract signing. *Journal of Computer Security*, 14(6):561–589, 2006.
- [NPS13] Gethin Norman, David Parker, and Jeremy Sproston. Model checking for probabilistic timed automata. *Formal Methods in System Design*, 43(2):164–190, 2013.
- [Par02] D. Parker. *Implementation of Symbolic Model Checking for Probabilistic Systems*. Ph.D. thesis, University of Birmingham, 2002.

- [Pnu77] A. Pnueli. The temporal logic of programs. In *Proc. 18th Annual Symposium on Foundations of Computer Science (FOCS'77)*, pages 46–57. IEEE Computer Society Press, 1977.
- [RS07] Stefan Ratschan and Zhikun She. Safety verification of hybrid systems by constraint propagation-based abstraction refinement. *ACM Trans. Embedded Comput. Syst.*, 6(1), 2007.
- [KNP04a] J. Rutten, M. Kwiatkowska, G. Norman, and D. Parker. *Mathematical Techniques for Analyzing Concurrent and Probabilistic Systems*, P. Panangaden and F. van Breugel (eds.), volume 23 of *CRM Monograph Series*. American Mathematical Society, 2004.
- [Shm04] V. Shmatikov. Probabilistic model checking of an anonymity system. *Journal of Computer Security*, 12(3/4):355–377, 2004.
- [SS01] D. Simons and M. Stoelinga. Mechanical verification of the IEEE 1394a root contention protocol using UPPAAL2k. *Software Tools for Technology Transfer*, 3(4):469–485, 2001.
- [Spr01] J. Sproston. *Model Checking for Probabilistic Timed and Hybrid Systems*. Ph.D. thesis, School of Computer Science, The University of Birmingham, 2001.
- [Ste06] G. Steel. Formal analysis of PIN block attacks. *Theoretical Computer Science*, 367(1-2):257–270, 2006.
- [Sto02] M. Stoelinga. *Alea jacta est: Verification of probabilistic, real-time and parametric systems*. Ph.D. thesis, University of Nijmegen, 2002.
- [SV99] M. Stoelinga and F. Vaandrager. Root contention in IEEE 1394. In J.-P. Katoen, editor, *Proc. 5th International AMAST Workshop on Real-Time and Probabilistic Systems (ARTS'99)*, volume 1601 of *LNCS*, pages 53–74. Springer, 1999.
- [SMA+07] A. Susu, M. Magno, A. Acquaviva, D. Atienzay, and G. De Micheli. Reconfiguration strategies for environmentally powered devices: Theoretical analysis and experimental validation. *Transactions on High-Performance Embedded Architectures and Compilers*, 1(1):327–346, 2007.
- [Var85] M. Vardi. Automatic verification of probabilistic concurrent finite state programs. In *Proc. 26th Annual Symposium on Foundations of Computer Science (FOCS'85)*, pages 327–338. IEEE Computer Society Press, 1985.
- [VW94] M. Vardi and P. Wolper. Reasoning about infinite computations. *Information and Computation*, 115(1):1–37, 1994.
- [WZ10] B. Wachter and L. Zhang. Best probabilistic transformers. In G. Barthe and M. Hermenegildo, editors, *Proc. 11th International Conference on Verification, Model Checking and Abstract Interpretation (VMCAI'10)*, volume 5944 of *LNCS*, pages 362–379. Springer, 2010.
- [WK05] F. Wang and M. Kwiatkowska. An MTBDD-based implementation of forward reachability for probabilistic timed automata. In D. Peled and Y.-K. Tsay, editors, *Proc. 3rd International Symposium on Automated Technology for Verification and Analysis (ATVA'05)*, volume 3707 of *LNCS*, pages 385–399. Springer, 2005.
- [YS02] H. Younes and R. Simmons. Probabilistic verification of discrete event systems using acceptance sampling. In E. Brinksma and K. Larsen, editors, *Proc. 14th International Conference on Computer Aided Verification (CAV'02)*, volume 2404 of *LNCS*, pages 223–235. Springer, 2002.

- [ZPK05a] Y. Zhang, D. Parker, and M. Kwiatkowska. A wavefront parallelisation of CTMC solution using MTBDDs. In *Proc. International Conference on Dependable Systems and Networks (DSN'05)*, pages 732–742. IEEE Computer Society Press, 2005.