

Thomas Bonald, Professor

CONTACT INFORMATION	Telecom ParisTech 23 avenue d'Italie 75013 Paris France	Tel: (33) 1 45 81 71 67 E-mail: thomas.bonald@telecom-paristech.fr Home page: perso.telecom-paristech.fr/~bonald
RESEARCH INTERESTS	Graph analysis, ranking, clustering Machine learning, anomaly detection Resource allocation in networks and data centers	
CURRENT APPOINTMENTS	Professor, Computer Science and Networking department, Telecom ParisTech Member of the Evaluation Committee of Inria Associate Editor for the IEEE/ACM Transactions on Networking	
EDUCATION	1999 PhD, Applied Mathematics, Ecole Polytechnique, France 1996 M. Sc., Networks and distributed systems, University of Nice Sophia-Antipolis, France 1996 Eng. degree, Telecom ParisTech, France 1994 Eng. degree, Ecole Polytechnique, France	
POSITIONS	Since 2013 Full professor, Telecom ParisTech, France 2009 – 2013 Associate professor, Telecom ParisTech, France 2004 – 2006 Associate professor, Ecole Normale Supérieure, Paris, France 1999 – 2009 Research engineer, Orange Labs, Paris, France	
AWARDS	Best Paper Award of the ACM Sigmetrics / Performance conference in 2004 Orange Labs Innovation Award in 2009 Best Paper Award of NTMS conference in 2012 SEE Blondel Medal in 2013	
BOOK	T. Bonald and M. Feuillet, Network Performance Analysis, Wiley, 2011	
JOURNAL PUBLICATIONS	<ol style="list-style-type: none">1. T. Bonald, Comparison of TCP Reno and TCP Vegas via a fluid approximation, Performance Evaluation, 1999.2. T. Bonald, F. Baccelli, Window flow control in FIFO networks with cross traffic, Queueing Systems, 1999.3. T. Bonald, D. Down, Stability of mixed generalized Jackson networks, Operations Research Letters, 1999.4. T. Bonald, A. Proutière, Insensitivity in processor-sharing networks, Performance Evaluation, 2002.5. T. Bonald and A. Proutiere. Insensitive bandwidth sharing in data networks, Queueing Systems, 2003.6. T. Bonald, J. Roberts, Congestion at flow level and the impact of user behaviour, Computer Networks, 2003.7. T. Bonald, On the flow level performance of some opportunistic scheduling algorithms, European Transactions on Telecommunications, 2004.	

8. T. Bonald, J. Virtamo, Calculating the flow level performance of balanced fairness in tree networks, *Performance Evaluation*, 2004.
9. T. Bonald, A. Proutière, On stochastic bounds for monotonic processor sharing networks, *Queueing Systems*, 2004.
10. T. Bonald, A. Proutière, On performance bounds for balanced fairness, *Performance Evaluation*, 2004.
11. T. Bonald, P. Olivier, J. Roberts, Dimensioning IP access links carrying data traffic, *Telecommunication Systems*, 2004.
12. T. Bonald, A. Proutière, Conservative estimates of blocking and outage probabilities in CDMA networks, *Performance Evaluation*, 2005.
13. T. Bonald, J. Virtamo, A recursive formula for multirate systems with elastic traffic, *IEEE Communications Letters*, 2005.
14. T. Bonald, L. Massoulié, A. Proutière, J. Virtamo, A queueing analysis of max-min fairness, proportional fairness and balanced fairness, *Queueing Systems*, 2006.
15. T. Bonald, S. Borst, A. Proutière, Inter-cell scheduling in wireless data networks, *European Transactions on Telecommunications*, 2006.
16. T. Bonald, Insensitive traffic models for communication networks, *Discrete Events Dynamic Systems*, 2007.
17. T. Bonald, J. Roberts, Scheduling network traffic, *Performance Evaluation Review*, 2007.
18. T. Bonald, M-A. Tran, Flow vs. time sampling for throughput performance evaluation, *Performance Evaluation*, 2007.
19. T. Bonald, M-A. Tran, On Kelly networks with shuffling, *Queueing Systems*, 2008.
20. T. Bonald, S. Borst, N. Hegde, M. Jonckheere, A. Proutière, Flow-level performance and capacity of wireless networks with user mobility, *Queueing Systems*, 2009.
21. T. Bonald, M. Feuillet, On the stability of flow-aware CSMA, *Performance Evaluation*, 2010.
22. T. Bonald, J. Roberts, Internet and the Erlang formula, *ACM Computer Communication Review*, 2012.
23. T. Bonald and M. Feuillet, Performance of CSMA in multi-channel wireless networks, *Queueing Systems*, 2012.
24. T. Bonald, D. Cuda, R. Indre, and L. Noirie, Building optical packet networks without buffering, signalling or header processing, *IEEE/OSA Journal on Optical Communication and Networking*, 2013.
25. A. Bianco, T. Bonald, D. Cuda, and R. Indre, Cost, power consumption and performance evaluation of metro networks, *IEEE/OSA Journal on Optical Communication and Networking*, 2013.
26. N. Benzaoui, Y. Pointurier, T. Bonald, and J.-C. Antona. Impact of the electronic architecture of optical slot switching nodes on latency in ring networks, *IEEE/OSA Journal of Optical Communications and Networking*, 2014.
27. T. Bonald, J. Roberts. Enhanced cluster computing performance through proportional fairness. *Performance Evaluation*, 2014.
28. N. Benzaoui, Y. Pointurier, T. Bonald, Q. Wei, and M. Lott. Optical slot switching latency in mobile backhaul networks. *IEEE/OSA Journal of Lightwave Technology*, 2015.
29. A. Khlass, T. Bonald, S-E. Elayoubi. Performance evaluation of intra-site coordination schemes in cellular networks. *Performance Evaluation*, Elsevier, 2016.

30. T. Bonald, C. Comte. The multi-source model for dimensioning data networks. Computer Networks, Elsevier, 2016.
31. T. Bonald, L. Mekinda, Luca Muscariello. Fair throughput allocation in Information-Centric Networks. Computer Networks, Elsevier, 2017.
32. T. Bonald, C. Comte. Balanced Fair Resource Sharing in Computer Clusters. Performance Evaluation, Elsevier, 2017.
33. T. Bonald, C. Comte, V. Shah, G. De Veciana. Poly-symmetry in processor-sharing systems. Queueing Systems, Springer Verlag, 2017.

CONFERENCE
PUBLICATIONS

1. T. Bonald, J. Bolot, M. May, Drop behavior of RED for bursty and smooth traffic, IEEE IWQoS 1999.
2. T. Bonald, J. Bolot, M. May, Analytical evaluation of RED Performance, IEEE Infocom 2000.
3. T. Bonald, S. Ben Fredj, A. Proutière, G. Régnié, J. Roberts, Statistical bandwidth sharing: a study of congestion at flow level, ACM Sigcomm 2001.
4. T. Bonald, A. Proutière, J. Roberts, Statistical performance guarantees for streaming flows using Expedited Forwarding, IEEE Infocom 2001.
5. T. Bonald, A. Proutière, G. Régnié, J. Roberts, Insensitivity results in statistical bandwidth sharing, ITC 17, 2001.
6. T. Bonald, L. Massoulié, Impact of fairness on Internet performance, ACM Sigmetrics / IFIP Performance 2001.
7. T. Bonald, J. Roberts, Performance modeling of elastic traffic in overload, ACM Sigmetrics / IFIP Performance 2001.
8. T. Bonald, A. Proutière, Insensitive bandwidth sharing, IEEE Globecom 2002.
9. T. Bonald, S. Oueslati, J. Roberts, IP traffic and QoS control: towards a flow-aware architecture, World Telecommunications Congress 2002.
10. T. Bonald, A. Proutière, Downlink data channels: User performance and cell dimensioning, ACM Mobicom 2003.
11. T. Bonald, A. Proutière, J. Roberts, J. Virtamo, Computational aspects of balanced fairness, ITC 18, 2003.
12. T. Bonald, P. Olivier, J. Roberts, Dimensioning high-speed IP access networks, ITC 18, 2003.
13. T. Bonald, S. Borst, A. Proutière, How mobility impacts the flow-level performance of wireless data systems, IEEE Infocom 2004.
14. T. Bonald, A score-based opportunistic scheduler for fading radio channels, European Wireless 2004.
15. T. Bonald, A. Proutière, On performance bounds for the integration of elastic and adaptive streaming traffic, ACM Sigmetrics / IFIP Performance 2004.
16. T. Bonald, M. Jonckheere, A. Proutière, Insensitive load balancing, ACM Sigmetrics / IFIP Performance 2004.
17. T. Bonald, S. Borst, N. Hegde, A. Proutière, Wireless data performance in multi-cell scenarios, ACM Sigmetrics / IFIP Performance 2004.
18. T. Bonald, S. Borst, A. Proutière, Inter-cell scheduling in wireless data networks, European Wireless 2005.

19. T. Bonald, A. Proutière, On the traffic capacity of cellular data networks, ITC 19, 2005.
20. T. Bonald, A. Proutière, Flow-level stability of utility-based allocations for non-convex rate regions, CISS 2006.
21. T. Bonald, Throughput performance of networks with linear capacity constraints, CISS 2006.
22. T. Bonald, Insensitive queueing models for communication networks, Valuetools 2006.
23. T. Bonald, The Erlang model with non-Poisson flow arrivals, ACM Sigmetrics / IFIP Performance 2006.
24. T. Bonald, A. Penttinen, J. Virtamo, On light and heavy traffic approximations of balanced fairness, ACM Sigmetrics / IFIP Performance 2006.
25. T. Bonald, L. Muscariello, Opportunistic scheduling of voice and data traffic in wireless networks, EuroFGI Workshop on IP QoS and Traffic Control, 2007.
26. T. Bonald, P. Olivier, Quasi-stationary models for performance analysis of real-time traffic, 18th ITC Specialist Seminar, 2008.
27. T. Bonald, A. Ibrahim, J. Roberts, Traffic capacity of multi-cell WLANs, ACM Sigmetrics 2008.
28. T. Bonald, F. Mathieu, A. Perino, L. Massoulié, A. Twigg, Epidemic live streaming: Optimal performance trade-offs, ACM Sigmetrics 2008.
29. T. Bonald, A recursive formula for estimating the packet loss rate in IP networks, Valuetools 2009
30. T. Bonald, A. Ibrahim, J. Roberts, The impact of association on the capacity of WLANs, WiOpt 2009.
31. T. Bonald, A. Ibrahim, J. Roberts, Enhanced spatial reuse in multi-cell WLANs, IEEE Infocom 2009.
32. T. Bonald, M. Feuillet, A. Proutière, Is the Law of the Jungle sustainable for the Internet? IEEE Infocom 2009.
33. T. Bonald, N. Hegde, Capacity gains of some frequency reuse schemes in OFDMA networks IEEE Globecom 2009.
34. T. Bonald, S. Oueslati, J. Roberts, C. Rolland, Swing: Traffic capacity of a simple WDM ring network, ITC 21, 2009.
35. T. Bonald, R. Indre, S. Oueslati, C. Rolland, On virtual optical bursts for QoS support in OBS networks, ONDM 2010.
36. T. Bonald, R. Indre, S. Oueslati, C. Rolland, Throughput-delay trade-offs in slotted WDM ring networks, Broadnets 2010.
37. T. Bonald, L. Muscariello, N. Ostallo, Self-priorization of audio and video traffic, ICC 2011.
38. T. Bonald, S. El Ayoubi, A. El Falou, J-B. Landre, Radio capacity improvement with HSPA+dual-cell, ICC 2011.
39. T. Bonald and M. Feuillet, Flow-aware CSMA in multi-channel wireless networks, CISS 2011.
40. T. Bonald, J-P. Haddad, and R.R. Mazumdar, Congestion in large balanced multirate links, ITC 23, 2011.
41. T. Bonald, R-M. Indre, and S. Oueslati. Adaptive optical burst switching, ITC 23, 2011.

42. C. Betoule, T. Bonald, R. Clavier, D. Rossi, G. Rossini and G. Thouenon, Adaptive probabilistic flooding for multipath routing. In Proceedings of NTMS, 2012.
43. T. Bonald and D. Cuda. Rate-optimal scheduling schemes for asynchronous input-queued packet switches. In Proceedings of ACM Sigmetrics MAMA, 2012.
44. A. Khlass, T. Bonald, S-E. El Ayoubi. Flow-level performance of intra-site coordination in cellular networks. In Proceedings of WiOpt 2013.
45. A. Khlass, S-E. El Ayoubi, T. Bonald. Capacity gains from multipoint single frequency transmission in HSPA+. In Proceedings of WCNC 2013.
46. T. Bonald, A. Proutière. Two-target algorithms for infinite-armed bandits with Bernoulli rewards. In Proceedings of NIPS 2013.
47. P. Delesques, T. Bonald, G. Froc, P. Ciblat, C. Ware. Enhancement of an optical burst switch with shared electronic buffers. In Proceedings of ONDM 2013.
48. A. Famulari, F. Longo, G. Campobello, T. Bonald, M. Scarpa. A simple architecture for secure and private data sharing solutions. In Proceedings of ISCC 2014.
49. A. Khlass, S-E. El Ayoubi, T. Bonald. Multi-flow transmission and carrier aggregation inter-operation in HSPA+ Advanced. In Proceedings of IEEE VTC 2014.
50. N. Benzaoui, Y. Pointurier, T. Bonald, Q. Wei, and M. Lott. Optical slot switching latency in mobile backhaul networks. In Proceedings of ECOC 2014.
51. T. Bonald. Traffic models for user-level performance evaluation in data networks. In Proceedings of ITC 2015.
52. A. Khlass, T. Bonald, S-E. Elayoubi. Analytical modeling of downlink CoMP in LTE-advanced. In Proceedings of IEEE VTC 2015.
53. N. Benzaoui, Y. Pointurier, T. Bonald, B. Uscumlic, Q. Wei. Mobility support in optical slot switching-based next-generation mobile backhaul networks. In Proceedings of ECOC 2015.
54. N. Abbas, T. Bonald, B. Sayrac, How mobility impacts the performance of inter-cell coordination in cellular data networks. In Proceedings of IEEE Globecom 2015.
55. T. Bonald, S-E. Elayoubi, Y-T. Lin. A flow-level performance model for mobile networks carrying adaptive streaming traffic. In Proceedings of IEEE Globecom, 2015.
56. N. Abbas, T. Bonald, B. Sayrac. Opportunistic gains of mobility in cellular data networks. In Proceedings of WiOpt 2015.
57. T. Bonald, J. Roberts. Multi-resource fairness: Objectives, algorithms and performance. In Proceedings of ACM Sigmetrics 2015.
58. E. Kaufmann, T. Bonald, M. Lelarge. A spectral algorithm with additive clustering for the recovery of overlapping communities in networks. In Proceedings of ALT 2016.
59. N. Abbas, T. Bonald, B. Sayrac. Mobility-aware scheduler in CoMP systems. In Proceedings of IEEE PIMRC 2016.
60. T. Bonald, J. Roberts, C. Vitale. Convergence to multi-resource fairness under end-to-end window control. In Proceedings of IEEE INFOCOM 2017.
61. T. Bonald, R. Combes. A Minimax Optimal Algorithm for Crowdsourcing. In Proceedings of NIPS, 2017.

PATENTS

1. T. Bonald, Method for selecting a transport channel from a TDMA protocol, EP1473957, 2003.
2. T. Bonald, A. Proutière, Method for selecting receiving stations in a data radio transmitting system, EP1767046, 2004.
3. T. Bonald, N. Hegde, A. Proutière, Scheduling of terminals for sending data to a terminal on an HSDPA channel via several base stations, EP07803923, 2006.
4. T. Bonald, L. Muscariello, Apparatus and associated methodology of processing a data communication flow, EP2031809, 2007.
5. T. Bonald, S. Oueslati, J. Roberts, Technique for communicating between a plurality of nodes, EP2314018, 2008.
6. T. Bonald, A. Ibrahim, J. Roberts, Technique for selecting a communication frequency, WO2010061096, 2009.
7. T. Bonald, L. Muscariello, Technique for processing data streams in a communication network, EP2428008, 2009.
8. T. Bonald, R-M Indre. Technique for combining optical signals on the same wavelength, EP2549773, 2011.
9. T. Bonald, D. Cuda, R-M Indre. Technique for signalling collision in the combination of multiple optical signals, EP2549773, 2011.
10. T. Bonald, A. Famulari. Method for processing geolocation data, WO2015011296, 2013.

INVITED TALKS

1. Resource sharing in 3G wireless data networks: A flow-level approach
IEEE International Conference on Networking (Guadeloupe, France, 2004)
2. Scheduling and admission control in cellular data networks
Workshop on Resource Allocation in Wireless Networks (Riva Del Garda, Italy, 2005)
3. A teletraffic theory for data networks
Workshop on Operations Management (Eindhoven, The Netherlands, 2006)
4. Insensitive traffic models for communication networks
Valuetools conference (Pisa, Italy, 2006)
5. Resource allocation in data networks
Workshop on Network Control and Optimization (Avignon, France, 2007)
6. Optimal random access in communication networks
Workshop on Network Control and Optimization (Gent, Belgium, 2010)
7. Statistical bandwidth sharing in data networks
Workshop on Network Science (Maynooth, Ireland, 2011)
8. Traffic models for the Internet
AlgoTel (Montpellier, France, 2012)
9. Bandwidth sharing models for the Internet
INFORMS Telecommunications Conference (Lisboa, Portugal, 2014)
10. Resource sharing in data networks
Stochastic networks (Eindhoven, The Netherlands, 2014)

CITATIONS

h-index = 34 (source: Google Scholar)

PROGRAM
COMMITTEES

- Program committee chair of WiOpt 2017
- Program committee chair of International Teletraffic Congress 2012
- Program committee chair of ACM Sigmetrics / Performance 2009
- Technical area chair of IEEE Infocom 2009
- Regular member of Program Committees of ACM Sigmetrics

TEACHING

- Probability (undergraduate, 40h, since 2012)
- Statistics (undergraduate, 10h, since 2016)
- Graph mining (graduate, 24h, since 2016)
- Data clustering (graduate, 10h, since 2017)
- Data structures and algorithms (undergraduate, 30h, 2012–2015)
- Queuing theory (graduate, 30h, 2004–2016)
- Information theory (graduate, 30h, 2004–2006)
- Resource allocation in networks (graduate, 30h, 2014–2016)
- Communication networks (graduate, 20h, 2004–2006)
- IP networks (undergraduate, 15h, 2010–2014)