

Mohamad ASSAAD

TCL Chair on 5G
Full Professor, Ph.D.
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IEEE Senior member

French Chapter: Communications (COM019)

Education

- 2014 “Habilitation à Diriger des Recherches” (HDR degree) from ParisSud University. This degree is required in France to become Full Professor.
- 2006 Ph.D. in Telecommunications with high honor from Telecom ParisTech France
- 2002 Master degree in Telecommunications with high honor from Telecom ParisTech France
- 2001 B.E. in Electrical and Electronics Engineering with high honor from Lebanese University.

Research Experience

- January 2017 – present: TCL Chair on 5G
- 2016 – present: Full Professor at CentraleSupélec (a top graduate Engineering school in France)
- 2012 – 2015: Associate Professor at CentraleSupélec
- 2006 – 2012: Assistant Professor at CentraleSupélec

Research Activities

- Stochastic resource optimization strategies in wireless networks
- Traffic-Aware Joint resource allocation and feedback strategies in 5G networks
- Massive MIMO (resource management, pilot allocation, channel estimation)
- Multiple Access techniques for IoT
- Queuing Stability in Wireless networks
- Inter-cell interference coordination/management in multi-cell systems

Mathematical Skills

- Optimization theory: linear, non linear (convex, quasi convex, monotonic, etc.), combinatorial (graph theory, cutting plane solutions / valid inequalities, approximation algorithms, etc.): several papers accepted/published in IEEE TSP, TWC, TCOM, Electronic Notes in Discrete Mathematics, Optimization and Engineering journal etc.
- Stochastic optimization: Markov Decision Process (MDP), Lyapunov-Based Optimization: 2 papers in IEEE Transactions on Information Theory
- Queuing theory (stability, performance analysis using Markov chains): 2 papers in IEEE Transactions on Information Theory

Recognitions

- IEEE Senior Member
- Co-author of a paper selected among the best 5 papers at IEEE WiOpt 11, Princeton, and published in a special issue of Elsevier Performance Evaluation Journal.
- Co-author of a paper selected among the best papers at IEEE ICN 04 and published in a special issue of Telecommunications Systems Journal.

Services and activities

- Editor for IEEE Wireless Communications Letters: 2017→ present
- Editor for EURASIP Journal on Wireless Communications and Networking: 2012→ present
- Co-chair for the IEEE ICC - Wireless Communications Symposium 2017, France
- Chair of a Workshop on Device to Device, 2015
- Technical Program Committee member for the following IEEE conferences:
 - IEEE Global Telecommunications Conference (Globecom) 2007, 2008, 2009, 2010, 2011, 2013, 2015, 2016, 2017
 - IEEE International Conference on Communications (ICC) 2010, 2012, 2013, 2014, 2015, 2016, 2018
 - IEEE Wireless Communications and Networking Conference (WCNC) 2008, 2009, 2016, 2017, 2018
 - IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC) 2008, 2010, 2011, 2012, 2013, 2016
 - IEEE International Conference on Communications in China (ICCC) 2012, 2015
 - IEEE/IFIP Wireless Days 2008, 2009, 2010, 2011, 2012
 - IEEE International Symposium on Wireless Communication Systems (ISWCS) 2012
 - IEEE Vehicular Technology Conference (VTC) Spring 2007, 2009
- Reviewer for the following IEEE journals:
 - IEEE transactions on Information Theory
 - IEEE Transactions on Signal Processing
 - IEEE Transactions on Wireless Communications
 - IEEE Transactions on Communications
 - IEEE Transactions on Vehicular Technologies
 - IEEE communication letters
 - IEEE Wireless Communication Letters
 - IEEE Journal on Selected Areas in Communications (JSAC)
 - IEEE Transactions on Automatic Control

Tutorials and Keynote Speech

- IEEE WCNC 2016: tutorial on MIMO for 5G
- IEEE PIMRC Conference 2015: tutorial on 5G
- IEEE ISWCS conference 2015: tutorial on 5G
- Keynote speaker: 16th annual Symposium on Communications and Vehicular Technologies (Louvain), IEEE WCNC'16 Workshop on Novel Waveform and MAC Design for 5G.
- Invited talks: Singapore university on Technology and Design, Oulou, Ericsson Finland, Orange Labs, Huawei, URSI-French Academy of Science workshop (2014), etc.

Funded research Projects

- **2017→2022** TCL Chair on 5G systems (Chair funded by TCL, 1250 K€)
- **2017→2019** ONE5G European Project
- **2015→ 2016** Feedback Strategies for Massive MIMO (funded by Huawei, 100K€)
- **2013→ 2016** SHARING: European Project (CELTIC, 200K€)
- **2011→2012** WISDOM (French Project, 80K€)
- **2006 →2008** OPUS: ANR French National project (150K€)
- **2008 → 2010** APOGEE: ANR French National project (120K€)
- **2008 → 2011** RAF: French national project (funded by “pôle Systematic”, 130K€)
- **2008 → 2011** WIMAGIC (WiMAX at High Speed): STREP European project (250K€)
- **2008 → 2011** Involved in NEWCOM++: European network of Excellence
- **2007 → 2010** URC: French National project (funded by “pôle Systematic”, 300K€)
- **2004 → 2006** Streaming in HSDPA: project funded by France Telecom (150K€)
- **2005 → 2006** ALMERIA: National research project

Current Ph.D. Students

1. Rita Ibrahim: **Energy Efficient Device-to-Device techniques** (October 2015 – February 2019), funded by Orange Labs.
2. A. Maatouk (since Oct. 2017)
3. S. Kriouile (since Oct. 2017)

Current Postdoc

1. Wenjie LI (January 2017 – present): Device to Device coordination in 5G systems
2. Salah Eddine Hajri (2018)
3. Juwendo Denis (2018)
4. Vincent Angilella (2018)
5. Nesrine Ben Khalifa (2018)

Former Postdoc

1. Maialen Larranega (2015→ September 2017): Queue Aware resource allocation techniques in 5G networks. Currently permanent researcher at ASML, Netherlands.

2. Bakarim Diomande (2013→June 2016): Stochastic optimization techniques for large wireless networks. Currently senior researcher at Telecom SudParis, France.
3. Faiz Hamid: Quadratic Integer optimization (June 2012 → June 2013)- co-advised with Walid Ben-Ameur. He is currently assistant professor at IIT Kangapur (India).
4. Mourad Khanfouci: resource optimization using convex optimization (2007). Currently senior researcher with Mitsubishi Electric MERCE.

Former Ph.D. Students

1. Jérôme Gaveau: **Distributed Resource Optimization in Ad hoc Networks** (March 2015 – March 2018). Funded by THALES. Currently with DGA.
2. Salaheddine Hajri: **Performance improvement of 5G Wireless Systems taking into account Traffic Patterns** (Jan 2015 – Dec 2017). Currently Postdoc TCL Chair.
3. Matha Deghel: **Traffic Aware Interference Management Techniques Taking into account Feedback Cost** (September 2013 → April 2017). Currently with Nokia Bell Labs.
4. Ahmed Farhan Hanif: **Opportunistic design for autonomous wireless networks** (December 2010 → April 2014). Currently with Orange Labs.
5. Apostolos Destounis : **Service Aware Resource Allocation in Small Cell Networks** (April 2011 – April 2014) – co-advised with Merouane Debbah. Currently with Huawei France.
6. Subhash Lakshminarayana: **Cross Layer Design in MIMO Multicell Systems** (October 2009 → December 2012) co advised with Merouane Debbah. After a postdoc at Princeton University, he is now permanent researcher at ADC Center Singapore.
7. Ayaz Ahmad: **Cross layer design in wireless cooperative systems** (October 2008 → December 2011). Currently assistant professor at COMSAT.
8. Naveed Ul Hassan: **Cross layer optimization in WiMAX OFDMA systems**, (October 2006 → October 2009). Currently assistant professor at LUMS University.
9. Christophe Gaie: **Resource allocation in heterogeneous networks** (funded by Motorola), (October 2006 → October 2009) co advised with Pierre Duhamel. Currently working for the French government.

Former Msc. Students

1. Ghadir Ayache (2017), currently PhD student at Rutgers University
2. S. Kriouile (2017), PhD at CentraleSupélec
3. A. Maatouk, PhD at CentraleSupélec
4. Mohamed Lyazidi, Stochastic Optimization in MU-MIMO systems.
5. Biying Jiang, Queuing Stability Analysis of Wireless Networks with Relaying.
6. Mélissa Djemou, resource optimization in LTE uplink
7. Ahmad Ayaz, resource optimization in OFDMA with imperfect Channel knowledge
8. Muhammed Saleem Shoeib cross layer optimization in uplink SC-FDMA
9. Maxim Girnyk, joint scheduling and resource allocation in cooperative networks
10. Youcef Ben Alia, Interference coordination in OFDMA system
11. Mohamad Aidibi, Impact of limited signaling on frequency scheduling in multi carrier wireless systems
12. Ines SLAMA, scheduling study for streaming services in HSDPA system, (March 2005 → September 2005)
13. Nuraj Pradhan, cell planning and resource allocation in HSUPA system, (October 2005 → April 2006)

Publications

- **Book**

1. Mohamad Assaad and Djamel Zeghlache : « TCP Performance over UMTS-HSDPA System » published by Taylor and Francis, CRC Press NY, July 2006, ISBN 0849368383. Translated into Chinese in 2009.

- **Patents**

1. "Method and apparatus for sharing multi-dimensional resources between multiple users in communication systems", (scheduling in WIMAX system), Patent No. EP2053801B1, Patent Application No. JP20080263883.
2. Control of a downlink radio frequency transmission from a multi-channel base station, no. EP13305852.9 filed 21/06/2013, European Patent.
3. Method and device for transmitting buffered data from a base station of a wireless communication network to user equipments, no. 813576, filed 12/04/2013, European Patent.
4. Method for CQI Feedback and User Scheduling for Data Downlinks for Multicarrier Systems.
5. Centralized CSI feedback algorithm for energy efficiency enhancement of D2D-enabled cellular networks, filed.
6. Distributed CSI feedback algorithm for energy efficiency enhancement of D2D-enabled cellular networks, filed.
7. Method and apparatus for robust Trial and Error based dynamic frequency allocation
8. Relay Operations In A Cellular Network, filed
9. Improvements In Or Relating to Dynamic channel Autocorrelation Based on User Scheduling, filed.
10. Distributed Resource Allocation Algorithm with Low Information Exchange, filed.

- **Publications per year**

- **Preprints**

1. Matha Deghel, Mohamad Assaad, Merouane Debbah, Anthony Ephremides, "Traffic-Aware Scheduling and Feedback Reporting in Multichannel Wireless Networks with Relaying," submitted.
2. R. Ibrahim, M. Assaad, B. Sayrac, A. Ephremides, "Stability Analysis of TDD Networks Revisited: A trade-off between Complexity and Precision," submitted.
3. S. Hajri and M. Assaad, M. Larranaga "Enhancing massive MIMO: A new approach for Uplink training based on heterogeneous coherence time," submitted.
4. S. Hajri, M. Larranaga, M. Assaad, "Speed Based User Scheduling: A new Approach for Uplink Training," submitted
5. S. Doumiati, M. Assaad, H. Artail, « A Framework of Topological Interference Management and Clustering for D2D Networks » submitted.
6. Wenjie LI, Mohamad Assaad, « Matrix Exponential Learning Schemes with Low Informational Exchange, » submitted.
7. S. Kriouile, M. Larranaga, M. Assaad, « Asymptotically optimal delay-aware scheduling in wireless networks", submitted.
8. Wenjie LI, Mohamad Assaad, « Distributed Stochastic Optimization in Networks with Low Informational Exchange, » submitted.

9. J. Gaveau, C. Le Martret, M. Assaad, « Frequency Allocation in Clustered Ad Hoc Networks in presence of Disturbances, » submitted.
10. N. Ben Khalifa, M. Assaad, M. Debbah, « Risk-Sensitive Reinforcement Learning for URLLC Traffic in Wireless Networks", submitted.
11. M. Sharma, A. Zappone, M. Debbah, M. Assaad, « Deep Learning Based Online Power Control for Large Energy Harvesting Networks, » submitted.

• **2018**

1. A. Maatouk, S. Hajri, M. Assaad, H. Sari, On Optimal Scheduling for Joint Spatial Division and Multiplexing Approach in FDD Massive MIMO, to appear in IEEE Transactions on Signal Processing.
2. A. Maatouk, M. Assaad, A. Ephremides, "Energy Efficient and Throughput Optimal CSMA Scheme," To appear in IEEE Transactions on Networking.
3. J. Gaveau, C. Le Martret, M. Assaad, « Performance Analysis of Trial and Error Algorithms, to appear in IEEE Transactions on Parallel and Distributed Systems.
4. Matha Deghel, Mohamad Assaad, Merouane Debbah, Anthony Ephremides, "Queuing Stability of a TDD Wireless Networks with Interference Alignment," in IEEE Transactions on Information Theory, 64(1): 547-576 (2018)
5. M. Larranaga, M. Assaad, A. Destounis, G. Paschos, "Asymptotically Optimal Pilot Allocation over Markovian Fading Channels," in IEEE Transactions on Information Theory, 64(7): 5395-5418 (2018)
6. S. Hajri and M. Assaad, "Energy Efficiency in Cache Enabled Small Cell Networks With Adaptive User Clustering," in IEEE Transactions on Wireless Communications, 17(2): 955-968 (2018)
7. Matha Deghel, Mohamad Assaad, Merouane Debbah, Anthony Ephremides, "Traffic-Aware Scheduling and Feedback Allocation in Multichannel Wireless Networks", in IEEE Transactions on Wireless Communications, 17(8): 5520-5534 (2018)
8. S. Doumiati, M. Assaad, H. Artail, « Topological Interference Management Framework for Device-to-Device Communication, », in IEEE Wireless Communications Letters, 7(4): 602-605 (2018)
9. A. Maatouk, E. Caliskan, M. Koca, M. Assaad, G. Gui, H. Sari, "Frequency- Domain NOMA with Two Sets of Orthogonal Signal Waveforms," IEEE Communications Letters 22(5): 906-909 (2018).
10. M. Larranaga, M. Assaad, K. De Turck, "Queue-Aware Energy Efficient Control for Dense Wireless Networks", In proc. of IEEE International Symposium on Information Theory (ISIT) 2018: 1570-1574
11. S. Hajri, J. Denis, M. Assaad, "Enhancing Favorable Propagation in Cell-Free Massive MIMO Through Spatial User Grouping", In proc. of IEEE SPAWC 2018.
12. Wenjie Li, M. Assaad, G. Ayache, M. Larranaga, "Matrix Exponential Learning for Resource Allocation with Low Informational Exchange", In proc. of IEEE SPAWC 2018.
13. Maatouk, M. Assaad, A. Ephremides, « The age of Updates in a Simple Relay Network, accepted in IEEE Information Theory Workshop (ITW), 2018.
14. M Assaad, SE Hajri, T Bonald, A Ephremides, "Power Control in Massive MIMO with Dynamic User Population," accepted in IEEE Globecom 2018.
15. S. Hajri, M. Assaad, M. Larranaga, "Enhancing massive MIMO: A new approach for Uplink training based on heterogeneous coherence times," In proc. of IEEE ICT 2018: 361-366
16. R. Ibrahim, M. Assaad, B. Sayrac, A. Gati, « When Distributed outperforms Centralized Scheduling in D2D-Enabled Cellular Networks », in proc. of ACM MSWIM 2018.
17. Wenjie LI and Mohamad Assaad, « Distributed Derivative-free Optimization in Large Communication Networks with Sparse Activity, » accepted in 57th IEEE Conference on Decision and Control (CDC), 2018.
18. J. Denis, A. Maatouk, S. Hajri, M. Assaad, Stay Longer at the Network's Edge: a Novel Proactive Caching Policy Through Sojourn Time, accepted in IEEE Globecom 2018.

19. E. Caliskan, A. Maatouk, M. Koca, M. Assaad, G. Gui,, "A Simple NOMA Scheme with Optimum Detection," accepted in IEEE Globecom 2018.
20. Doumiati, H. Artail, M. Assaad, "Managing Interference in D2D Networks via Clustering and Topological Awareness", in IEEE 23rd International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD), 2018.
21. H Sari, A Maatouk, E Caliskan, M Assaad, M Koca, G Gui, "On the Foundation of NOMA and its Application to 5G Cellular Networks," in proc. of IEEE WCNC 2018..
22. Maatouk, S. Hajri, M. Assaad, H. Sari, S. Sezginer, "Graph Theory Based Approach to Users Grouping and Downlink Scheduling in FDD Massive MIMO," in proc. of IEEE ICC 2018.

- **2017**

1. Matha Deghel, Mohamad Assaad, Merouane Debbah, Anthony Ephremides, "Queuing Stability of a TDD Wireless Networks with Interference Alignment," accepted in IEEE Transactions on Information Theory, 2017, available at <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8025416>.
2. M. Larranaga, M. Assaad, A. Destounis, G. Paschos, "Asymptotically Optimal Pilot Allocation over Markovian Fading Channels," accepted in IEEE Transactions on Information Theory, 2017, available at <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8115326>.
3. S. Hajri and M. Assaad, "Energy Efficiency in Cache Enabled Small Cell Networks With Adaptive User Clustering," accepted in IEEE Transactions on Wireless Communications, available at <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8114341>.
4. Matha Deghel, Mohamad Assaad, Merouane Debbah, Anthony Ephremides, "Traffic-Aware Scheduling and Feedback Allocation in Multichannel Wireless Networks", provisionally accepted in IEEE Transactions on Wireless Communications.
5. W. LI, M. Assaad, P. Duhamel, "Distributed Stochastic Optimization in Networks with Low Information Exchange," in Proc. of IEEE Allerton conference, 2017
6. R Al Khansa, JJ Saade, HA Artail, M Assaad, "A small cell approach to optimizing the coverage of MTC systems with massive MIMO and random access using stochastic geometry," in proc of IEEE WiMob 2017.
7. J. Gaveau, C. Le Martret, M. Assaad, "Grouping of Subcarriers and Effective SNR Statistics in Wideband OFDM Systems using EESM," in proc of IEEE WiMob 2017.
8. R. Ibrahim, M. Assaad, B. Sayrac, A. Ephremides, " Overlay D2D vs. Cellular Communications: A Stability Region Analysis," in proc of IEEE ISWCS, 2017.

- **2016**

1. A.F. Hanif, H. Tembine, M. Assaad and D. Zeghlache, "Mean Field Games in Cloud Networks", accepted in IEEE/ACM Transactions on Networking, 2015.
2. Ayaz Ahmad, Mohamad Assaad and Tembine Hamidou, "Risk Sensitive Control for Multimedia Traffic in Interfering Wireless Networks", to appear in IEEE Trans. On Vehicular Tech.
3. Salah Hajri, Mohamad Assaad, Giuseppe Caire, "Scheduling in Massive MIMO: User Clustering and Pilot Assignment," in Proc. of Allerton conference 2016.
4. M. Larranaga, M. Assaad, A. Destounis, G. Paschos, "Dynamic Pilot Allocation over Markovian fading channels: A restless bandit approach," in proc. of ITW 2016, 290 -294
5. Hajri, M. Assaad, "Caching Improvement using Adaptive Clustering," in Proc. of IEEE SPAWC 2016.
6. Akra and M. Assaad, "Energy Efficient Transmit Beamforming under Queuing Stability Constraints," In Proc. of IEEE WCNC 16.
7. Deghel, M. Assaad, M. Debbah, "Opportunistic Feedback Reporting and Scheduling Scheme for Multichannel Wireless Neetworks," In Proc. of IEEE Globecom 2016.
8. Larranaga, M. Assaad, A. Destounis, G. Paschos, "Asymptotic Optimal Pilot Allocation over Markovian fading channels," submitted to IEEE Transactions on Information Theory

9. Hajri, M. Assaad, "Energy Efficiency in Cache Enabled Small Cell Networks With Adaptive User Clustering. » submitted to IEEE Transactions on Wireless Communications

- **2015**

1. A. Destounis, M. Assaad, M. Debbah and B. Sayadi, « Traffic-Aware Training and Scheduling in MISO Downlink Systems », IEEE Transactions on Information Theory, 61 (5), pp. 2574-2599, 2015.
2. Subhash Lakshminarayana, Mohamad Assaad and Merouane Debbah "Coordinated Multi-cell Beamforming for Massive MIMO: A Random Matrix Approach", IEEE Transactions on Information Theory, 61 (6): 3387-3412, 2015.
3. A.F. Hanif, H. Tembine, M. Assaad and D. Zeghlache, "Mean Field Games in Cloud Networks", accepted in IEEE/ACM Transactions on Networking, 2015.
4. S. Lakshminaryana, M. Assaad and M. Debbah, "Energy Efficient Cross Layer Design in MIMO Multi-cell Systems," in IEEE JSAC, Special issue on Hetnets, 33 (10), pp. 2087-2103, Oct. 2015.
5. Ayaz Ahmad, Mohamad Assaad and Tembine Hamidou, "Risk Sensitive Control for Multimedia Traffic in Interfering Wireless Networks", to appear in IEEE Trans. On Vehicular Tech.
6. Hana Baili and Mohamad Assaad, "Optimal Scheduling and Power Allocation in Wireless Networks with Heavy Traffic", Mathematical Modeling of Dynamical Systems Journal (Taylor and Francis), to appear, 2015.
7. A. Destounis, M. Assaad, M. Debbah and B. Sayadi, « A Threshold-Based Approach for Joint Active User Selection and Feedback in MISO Downlink Systems », in proc. of IEEE ICC, London UK, June 2015.
8. Matha Deghel, Mohamad Assaad and Merouane Debbah, "system Performance of Interference Alignment under TDD Mode with Limited Backhaul", in proc. of IEEE ICC, London UK, June 2015.
9. M. Deghel, M. Assaad, and M. Debbah, "Queueing Stability and CSI Probing in a Wireless Network with Interference Alignment in TDD Mode", in proc. of IEEE International Symposium on Information Theory (ISIT), HongKong, June 2015.
10. M. Deghel, E. Bastug, M. Assaad and M. Debbah, "Joint Caching and Interference Alignment: A limited Backhaul Case", in proc. of IEEE SPAWC, Sweden, 2015.
11. S. Hajri and M. Assaad, "An Exclusion zone for Massive MIMO With Underlay D2D Communication, » in proc. of IEEE ISWCS (invited paper), Brussels, 2015.

- **2014**

1. A. Destounis, M. Assaad, M. Debbah, B. Sayadi and A. Feki, "On Queue-Aware Power Control in Interfering Wireless Links: Heavy Traffic Asymptotic Modelling and Application in QoS Provisioning", IEEE Transactions on Mobile Computing, Vol 13 No. 10, pp. 2345-2356, 2014.
2. Mohamad Assaad, Walid Ben-Ameur and Faiz Hamid, "Resource Optimization of Non-Additive Utility Functions in Localized SC-FDMA Systems", IEEE Transactions on Signal Processing, 62(18), pp. 4896-4910, 2014.
3. Naveed Ul Hassan and Mohamad Assaad, "Downlink Beamforming and Resource Allocation in Multi-Cell MISO-OFDMA Systems," in Transactions on Emerging Technologies, 25(2), pp. 173-184, 2014.
4. A. Destounis, M. Assaad, M. Debbah and B. Sayadi, «Traffic-Aware Training and Scheduling for the 2-user MISO Broadcast Channel », in IEEE Symposium on Information Theory (ISIT), Hawaii, USA, 28 June - 2 July, 2014.

- **2013**

1. Subhash Lakshminarayana, Mohamad Assaad, Merouane Debbah, "H-Infinity Control Based Scheduler for the Deployment of Small Cell Networks", Elsevier Performance Evaluation Journal, 70(7-8), pp. 513-527, 2013.
2. Mohamad Assaad, Walid Ben Ameer and Faiz Hamid, "An Interval Assignment Problem for Resource Optimization in Networks", Electronic Notes in Discrete Mathematics, Vol. 41, pp.237-244, 2013.
3. Naveed Ul Hassan, Mohamad Assaad and Hamidou Tembine, "Robust Power Control in Arbitrary Wireless Networks", IEEE Communication Letters, Vol. 17, issue 6, pp. 1124-1127, 2013.
4. A.F. Hanif, H. Tembine, M. Assaad and D. Zeghlache, "Distributed Transmit Beamforming with 1-bit Feedback for LoS-MISO Channels", in IEEE SPAWC, June 2013, Germany.
5. Subhash Lakshminarayana, M. Assaad and M. Debbah, "Energy Efficient Design in MIMO Multi-cell Systems with Time Average QoS Constraints", in IEEE SPAWC, June 2013, Germany.
6. A. Destounis, M. Assaad, M. Debbah and B. Sayadi, "A Traffic Aware Joint CQI Feedback and Scheduling Scheme for Multichannel Downlink Systems in TDD Feedback Mode", in IEEE PIMRC 2013.
7. A.F. Hanif, H. Tembine, M. Assaad and D. Zeghlache, "Distributed Power Control in Femto Cells using Bayesian Density Tracking", in IEEE Allerton conference, Oct 2013.

- **2012**

1. Ayaz Ahmad and Mohamad Assaad, "Optimal Resource Allocation In Downlink OFDMA Systems with Imperfect Channel Knowledge", Springer Journal on Optimization and Engineering (OPTE), Jan 2012.
2. A.F. Hanif, H. Tembine, M. Assaad and D. Zeghlache, "Distributed Stochastic Learning for Continuous Power Control in Wireless Networks", IEEE SPAWC 2012, June 2012.
3. A. Destounis, M. Assaad, M. Debbah, B. Sayadi and A. Feki, "Heavy Traffic Approach for Queue-Aware Power Control in Interfering Wireless Links", IEEE SPAWC 2012, June 2012.
4. S. Lakshminarayana, B. Li, M. Assaad, A. Eryilmaz, M. Debbah, "Fast-CSMA Based Distributed Scheduling Algorithm under SINR Model", IEEE ISIT 2012, accepted.
5. Destounis, A., M. Assaad, M. Debbah, B. Sayadi, and A. Feki, "Heavy Traffic Asymptotic Approach for Video Streaming over Small Cell Networks with Imperfect State Information", WWRF, Piraeus, Greece, 03/2012.
6. A. Makke, J. Tajer, O. Salem, M. Assaad and A. Mehroua, "Flooding Attacks Detection in Backbone Traffic Using Power Divergence », in 7th ACM Workshop on Performance Monitoring and Measurement of Heterogeneous Wireless and Wired Networks, accepted. .
7. N. Ul Hassan and M. Assaad, " Resource Optimization to achieve Hard Delay Constraints in OFDMA Systems", in proc. of IEEE ICC 2012, June 2012.
8. A.F. Hanif, H. Tembine, M. Assaad and D. Zeghlache, "Cloud Networking Mean Field Games », in proc of IEEE CloudNet 2012, Paris, October 2012.

- **2011**

1. Naveed Ul Hassan and Mohamad Assaad, "Dynamic Resource Allocation in Multi-service OFDMA Systems with Dynamic Queue Control", IEEE Transactions on Communications, Vol. 59, issue 6, June 2011, pp.1664-1674.
2. R. Aggarwal, M. Assaad, C. E. Koksal, and P. Schniter, "Optimal Joint Scheduling and Resource Allocation in OFDMA Downlink Systems with Imperfect Channel-State Information", IEEE Transactions on Signal Processing, 59 (11): 5589-5604, 2011.
3. S. Lakshminarayana, M. Assaad and M. Debbah, "H-Infinity Control Based Scheduler for the Deployment of Small Cell Networks", 9th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks, (WiOpt), Princeton, USA 2011,

accepted (**Selected among the best 5 papers of the conference and published in a special issue of Performance Evaluation Journal**).

4. M. Assaad, T. Hamidou and N. Ul Hassan, "Opportunistic Feedback scheme for OFDMA systems with imperfect uplink channels", IEEE International Conference on Communications ICC 2011, accepted.
5. R. Aggarwal, M. Assaad, C. E. Koksal, and P. Schniter, "Optimal Resource Allocation in OFDMA downlink Systems with Imperfect CSI", 12th IEEE Int'l Workshop on Signal Processing Advances in Wireless Communications (SPAWC) 2011, June 2011, San Francisco, USA.
6. H. Tembine, P. Vilanova, M. Assaad and M. Debbah, "A Mean Field Stochastic Game for SINR-based Medium Access Control", GameCom 2011, May 2011, Paris, France.
7. H. Tembine and M. Assaad, "Hybrid Mean Field Learning in Large-Scale Dynamic Robust Games", AMS International Conference on Control and Optimization with Industrial Applications, August 22-24, 2011, Ankara Turkey (to be published in *Applied and Computational Mathematics*, ISSN 1683-3511).
8. Subhash Lakshminarayana, M. Debbah and M. Assaad, "Asymptotic Analysis of Downlink Multi-cell Systems with Partial CSIT," IEEE International Symposium on Information Theory (ISIT 2011), July 31 – August 5, 2011, Saint Petersburg, Russia.
9. Ayaz Ahmad and Mohamad Assaad, "Power Efficient Resource Allocation in Uplink SC-FDMA Systems" IEEE PIMRC 2011, 11-15 September 2011, Toronto, Canada.
10. Ayaz Ahmad and Mohamad Assaad, "Polynomial-Complexity Optimal Resource Allocation Framework for Uplink SC-FDMA Systems", IEEE Globecom 2011, 5-9 December 2011, Houston, USA.
11. Mohamad Assaad, Ayaz Ahmad and Tembine Hamidou, "Risk Sensitive Resource Control Approach for Delay Limited Traffic in Wireless Networks", IEEE Globecom 2011, 5-9 December 2011, Houston, USA.

• **2010**

1. Naveed Ul Hassan and Mohamad Assaad, "Adaptive Resource Allocation with Strict Delay Constraints in OFDMA system," Eurasip Journal on Wireless Communications and Networking, 2010, Volume 2010, Article ID 121080, 14 pages.
2. Naveed Ul Hassan and Mohamad Assaad, "Time Scheduling, Subcarrier and Power Allocation in Multi-Service Downlink OFDMA Systems", IEEE International Conference on Communications ICC 2010, South Africa, May 2010.
3. Hassan Ayoub and Mohamad Assaad, "Scheduling in OFDMA systems with outdated channel knowledge," IEEE International Conference on Communications ICC 2010, South Africa, May 2010.
4. Naveed Ul Hassan and Mohamad Assaad, "Energy Efficient Causal Packet Scheduling in Wireless Fading Channels with Hard Delay Constraints," IEEE Wireless Communications and Networking Conference (WCNC) 2010, Sydney Australia, 2010.
5. Ayaz Ahmad and Mohamad Assaad, "Optimal Resource Allocation Framework for Downlink OFDMA System with Channel Estimation Error", IEEE Wireless Communications and Networking Conference (WCNC) 2010, Sydney, Australia, 2010.
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