## REFERENCES

- [1] The NS-3 Manual Available in http://www.nsnam.org/docs/release 24.1.
- [2] www.mathworks.com
- [3] IEEE standard 802.11n-2009
- [4] Elda Perahia, Robert Stacey, 2008, "Next Generation Wireless LANs Throughput, Robustness and Reliability in 802.11n", Cambridge University Press
- [5] IEEE standard 802.11ac-2013
- [6] Elda Perahia, Robert Stacey, 2013, "Next Generation Wireless LANs: 802.11n and 802.11ac", Cambridge University Press.
- [7] Matthew S. Gast, 2015, "Wi-Fi at Gigabit and Beyond 802.11ac A Survival Guide", o Reilly Media
- [8] XIRRUS White Paper, " 802.11ac Demystified-High Performance Wireless Networks" examples
- [9] Qiang Ni, Lamia Romdhani and Thierry Turletti, "A Survey of QoS Enhancements for IEEE 802.11 Wireless LAN," Journal of Wireless Communications and Mobile Computing, Wiley. 2004, vol. 4, Issue 5: pp.547-566
- [10] Emna Charfi, Lamia Chari and Lofti Kamoun, "PHY/MAC Enhancements and QoS mechanisms for Very High Throughput LANs: A Survey," IEEE Communications Surveys and Tutorials, Volume 15, No. 4, 4th quarter 2013.
- [11] Aqsa Malik, Junaid Qadir, Basharat Ahmad, Kok-Lim Alvin Yau and Ubaid Ullah, "Qos in IEEE 802.11-based Wireless Networks: A Contemporary Survey," arxiv.org, 1411.2852v1 [cs.NI] 11 Nov 2014.
- [12] William L. Formyduval and David J. Thuente, "Priority Inversion and Queue Management for 802.11 Priority WLANs," The 10th Annual IEEE CCNC-Wireless Networking Track
- [13] Ildefonso de la Cruz, Okhwan Lee and Sunghyun Choi, "Measurement-Based Call Admission Control Algorithm for Multi-Rate VoWLANs," 2012

- 9th Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks SECON.
- [14] Marta Gatnau Sarret, Jagjit Singh Ashta and Preben Mogensen, " A multi-QoS Aggregation Mechanism for Improved Fairness in WLAN," 2013 IEEE 78th Vehicular Technology Conference (VTC Fall)
- [15] Byoungjin Kim, Hyewon Lee, Seongho Byeon, Kwang Bok Lee, and Sunghyun Choi, "Enhancing QoS of Voice over WLANs," 2012 IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)
- [16] M. Angeles Santos, Student Member, IEEE, Jos'e Villal'on, and Luis Orozco-Barbosa, "A Novel QoE-Aware Multicast Mechanism for Video Communications over IEEE 802.11 WLANs," IEEE journal on selected areas in communications, VOL. 30, NO. 7, August 2012
- [17] Rub'en Gonz'alez, Alma Otero and Llorenc, Cerd'a, "A Binomial Rate Control for a Media Aware Access Point," 2012 Workshop on Engineering Applications (WEA)
- [18] Pouria Babakhani and Masoud sabaei, "A Learning Based Rate Adaption Algorithm in 802.11n Networks," 2011 Third International Conference on Computational Intelligence, Modelling & Simulation
- [19] Md. KhorshedAlam, Suhaimi Abdul Latif, Mosharrof H. Masud, Farhat Anwar, "A Review on Scheduling Schemes of High Speed Wireless Campus Network for Interactive Multimedia Transmission", 2013 IEEE Malaysia International Conference on Communications (MICC), 26-28 Nov. 2013, INSPEC Accession Number: 14266137
- [20] Juan Fang, I-Tai Lu, "Efficient channel access scheme for multiuser parallel transmission under channel bonding in IEEE 802.11ac", IET Communications, Year: 2015, Volume: 9, Issue: 13, Pages: 1591 1597, Pages: 1591 1597, DOI: 10.1049/iet-com.2014.1223

- [21] Bo Han, LushengJi, Seungjoon Lee, Robert R. Miller and Bobby Bhattacharjee, "Channel Access Throttling for Improving WLAN QoS," 6th Annual IEEE Communications Society Conference on Sensor Mesh and Ad Hoc Communications and Networks, 2009, SECON '09
- [22] Kang Yong Lee, KeeSeong Cho and Won Ryu, "Efficient QoS Scheduling Algorithm for Multimedia Services in IEEE 802.11e WLAN", 2011 IEEE Vehicular Technology Conference (VTC Fall), San Francisco, CA
- [23] Hushairi Zen, DaryoushHabibi, Justin Wyatt and Iftekhar Ahmad, "Converging Voice, Video and Data in WLAN with QoS support," 5th IFIP International Conference on Wireless and Optical Communications Networks, 2008.WOCN '08. IEEE
- [24] NasreddineHajlaoui, IssamJabriy, MalekTaiebz and Maher Benjemaa, "A Frame Aggregation Scheduler for QoS-sensitive applications in IEEE 802.11n WLANs," The 2nd International Conference on Communications and Information Technology (ICCIT): Communication Networks and Systems, Hammamet, pp 221 - 226
- [25] EmnaCharfi; Lamia Chaari; LotfiKamoun, "Joint Urgency Delay scheduler and adaptive aggregation technique in IEEE 802.11n networks", 2015 5th International Conference on Communications and Networking (COMNET), Year: 2015
- [26] Takuya Mishima, Shinichi Miyamoto, Seiichi Sampei, Wenjie Jiang, "Novel DCF-based Multi-User MAC Protocol and Dynamic Resource Allocation for OFDMA WLAN Systems", 2013 International Conference on Computing, Networking and Communications (ICNC), Year: 2013, Pages: 616 620, DOI: 10.1109/ICCNC.2013.6504157
- [27] Nan Bao, Junchao Li, Weiwei Xia, LianfengShen, "QoS-aware Resource Allocation Algorithm for OFDMA-WLAN Integrated System", 2013 1EEE Wireless Communications and Networking Conference (WCNC): MAC
- [28] Malati Hegde, Pavan Kumar, K. R. Vasudev, N. N. Sowmya, S. V. R. Anand, Anurag Kumar, Fellow, IEEE, and Joy Kuri, "Experiences With a

- Centralized Scheduling Approach for Performance Management of IEEE 802.11Wireless LANs," IEEE/ACM Transactions On Networking, VOL. 21, NO. 2, APRIL 2013, pp 648-662
- [29] Multi-Traffic Scheduler with Genetic Algorithm Huayue Wu, Weiwei Xia, Junchao Li and LianfengShen, "QoS-based Scheduling Algorithm for Downlink Multi-traffic in Ultra High Throughput WLAN", 2012 IEEE Second International Conference on Consumer Electronics - Berlin (ICCE-Berlin)
- [30] Maodong Li; PengHui Tan; Sumei Sun; Yong Huat Chew, "QoE-aware Scheduling for Video Streaming in 802.11n/ac-based High User Density Networks", 2016 IEEE 83rd Vehicular Technology Conference (VTC Spring), Year: 2016Pages: 1 5
- [31] Alberto Rico-Alvariño, Student Member, IEEE, and Robert W. Heath, Jr.,"Learning-Based Adaptive Transmission for Limited Feedback Multiuser MIMO-OFDM", IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS, VOL. 13, NO. 7, JULY 2014, pg 1806-18
- [32] Padraig O Flaithearta, Hugh Melvin and Michael Schukat, "Improving VoIP over Synchronized WLANs," 2013 International Conference on Digital Technologies, IEEE, Zilina.
- [33] Kosuke Watanabet, Nobuyoshi Komurot, Shiro Sakatat, Shigeo Shioda and Tutomu Murase "Receiving -Opportunity Control-employed QoS Guarantee Scheme In DCF and EDCA Stations Coexisting WLAN," 2012 IEEE Consumer Communications and Networking Conference (CCNC), Las Vegas NV, pp 372-373.
- [34] David Plets, Mostafa Pakparvar, Wout Joseph and Luc Martens, "
  Influence of Intra-Network Interference on Quality of Service in Wireless
  LANs," 2013 International Symposium on Broadband Multimedia Systems
  and Broadcasting (BMSB), London.

- [35] Sim ao Silva, Ricardo Lopes Pereira and Rui Valadas, "Experimental evaluation of FairWLAN," 2014 International Conference on Information Networking (ICOIN), pp 379-384.
- [36] Zi-Tsan Chou, Cong-Qi Huang, and J. Morris Chang, "QoS Provisioning for Wireless LANs with Multi-beam Access Point," IEEE Transactions on Mobile Computing, Vol 13, Issue 9, 2014, pp2113-2127.
- [37] Fusao Nuno, Takatoshi Sugiyama and Masahiro Morikura, "Qos Control Scheme That Uses Back Pressure Traffic Control For Wireless Lans," 2012 IEEE 23rd International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), pp 1442-1447
- [38] Calvin Iloki, Moustapha Mbaye, Moussa Diallo, "Feedback of the channel information for transmit beamforming in WLAN," 9th European Conference on Antennas and Propagation (EuCAP), 2015, IEEE Xplore.
- [39] Moussa Diallo, Maryline Hélard, Laurent Cariou, "A limited and efficient quantized feedback for IEEE 802.11n evolution," ICT 2013, DOI: 10.1109/ICTEL.2013.6632089, IEEE Conference Publications.
- [40] Pengfei Xia, Monisha Ghosh, Hanqing Lou, Robert Olesen, "Improved transmit beamforming for WLAN systems," 2013 IEEE Wireless Communications and Networking Conference (WCNC), IEEE Xplore.
- [41] Zhensheng Zhang, "DTRA: directional transmission and reception algorithms in WLANs with directional antennas for QoS support," IEEE Network, 2005, Vol 19, no 3, pp 27 32.
- [42] Di Kong, Evangelos Mellios, Geoffrey Hilton, Angela Doufexi, Andrew Nix, "The Impact of Regulatory Transmit Power Constraints on the Relative Performances of Wi-Fi Beamforming and Antenna Selection," 2015 IEEE 12th Malaysia International Conference on Communications (MICC), IEEE Xplore.
- [43] Heejung Yu, Heeyong Lee, "Comparison of MIMO schemes in IEEE 802.11ac under time-varying channels: analytical approach," 2014 IEEE

- Fourth International Conference Consumer Electronics Berlin (ICCE-Berlin), IEEE Xplore.
- [44] Ada S. Y. Poon, Mazhareddin Taghivand," Supporting and Enabling Circuits for Antenna Arrays in Wireless Communications," Proceedings of the IEEE, pp 2207 2218.
- [45] Osama Aboul-Magd, Uikun Kwon, Youngsoo Kim, Chunhui Zhu, "Managing downlink multi-user MIMO transmission using group membership," 2013 IEEE 10th Consumer Communications and Networking Conference (CCNC), pp 370 375.
- [46] Chunhui Zhu, Anirudh Bhatt, Youngsoo Kim, Osama Aboul-magd, Chiu Ngo, "MAC enhancements for downlink multi-user MIMO transmission in next generation WLAN," 2012 IEEE Consumer Communications and Networking Conference (CCNC), pp 832 837.
- [47] Chunhui Zhu, Chiu Ngo, Anirudh Bhatt, Youngsoo Kim, "Enhancing WLAN backoff procedures for downlink MU-MIMO support," 2013 IEEE Wireless Communications and Networking Conference (WCNC), pp. 368 -373.
- [48] Baofeng Ji, Kang Song, Chunguo Li, Yongming Huang, Luxi Yang, "Throughput enhancement for VHT WLANs based on two-level network allocation vector," 2012 IEEE Globecom Workshops, pp. 881 885.
- [49] Mohand Yazd, Adlen Ksentini, Louiza Bouallouche-Medjkoune, Djamil Aïssani, "Enhancement of the TXOP sharing designed for DL-MU-MIMO IEEE 802.11ac WLANs," 2015 IEEE Wireless Communications and Networking Conference (WCNC), pp. 908 - 913.
- [50] Mohand Yazid, Adlen Ksentini, Louiza Bouallouche-Medjkoune, Djamil Aïssani "Performance Analysis of the TXOP Sharing Mechanism in the VHT IEEE 802.11ac WLANs," IEEE Communications Letters, 2014, Vol. 18, Issue: 9, pp. 1599 1602.
- [51] Zhiqun Hu, Xiangming Wen, Zhaoxing Li, Zhaoming Lu, Wenpeng Jing, "Modeling the TXOP Sharing Mechanism of IEEE 802.11ac Enhanced

- Distributed Channel Access in Non-Saturated Conditions," IEEE Communications Letters, 2015, Vol 19, Issue: 9, pp. 1576 1579
- [52] Jiyoung Cha, Hu Jin, Bang Chul Jung, Dan Keun Sung, "Performance comparison of downlink user multiplexing schemes in IEEE 802.11ac: Multiuser MIMO vs. frame aggregation," 2012 IEEE Wireless Communications and Networking Conference (WCNC), pp. 1514 1519.
- [53] Yoshihide Nomura, Kazuo Mori, Katsuhiro Naito, Hideo Kobayashi, "High efficient packet aggregation scheme for multi-rate and VoIP packet transmissions in next generation MU-MIMO WLANs," 2014 International Conference on Advanced Technologies for Communications (ATC 2014), pp. 517 521.
- [54] Chulho Chung, Taewook Chung, Byungcheol Kang, Jaeseok Kim, "A-MPDU using fragmented MPDUs for IEEE 802.11ac MU-MIMO WLANs," 2013 IEEE International Conference of IEEE Region 10 (TENCON 2013),pp. 1 4.
- [55] Boris Bellalta, Jaume Barcelo, Dirk Staehle, Alexey Vinel, Miquel Oliver, "On the Performance of Packet Aggregation in IEEE 802.11ac MU-MIMO WLANs," IEEE Communications Letters, 2012, Vol 16, Issue 10, pp. 1588 -1591
- [56] Yoshihide Nomura, Kazuo Mori, Hideo Kobayashi, "Efficient Frame Aggregation with Frame Size Adaptation for Next Generation MU-MIMO WLANs," 2015 9th International Conference on Next Generation Mobile Applications, Services and Technologies, pp. 288 293.
- [57] Arafet Ben Makhlouf, Mounir Hamdi, "Dynamic Multiuser Sub-Channels Allocation and Real-Time Aggregation Model for IEEE 802.11 WLANs," IEEE Transactions on Wireless Communications, 2014, Vol 13, Issue 11, pp. 6015 6026
- [58] Zhanji Wu, Xiang Gao, Yongtao Shi, "A novel MU-MIMO-OFDM scheme with the RBD precoding for the next generation WLAN," MILCOM 2015 2015 IEEE Military Communications Conference, pp. 565 569

- [59] Woochang Lim, Gibum Kim, Jinwoo Kim, Hyuncheol Park, Keunmoo Lee, Hanyoung Jang, "Performance of linear precoding and user selection in IEEE 802.11ac downlink MU-MIMO system," 2014 IEEE Wireless Communications and Networking Conference (WCNC), pp. 925 929
- [60] A P Theeksha, S. Srikanth, "Performance analysis and mode selection of SU-MIMO and MU-MIMO in 802.11ac," 2013 International Conference on Recent Trends in Information Technology (ICRTIT), pp. 732 - 737.
- [61] Daisuke Nojima, Leonardo Lanante, Yuhei Nagao, Masayuki Kurosaki, Hiroshi Ochi, "Performance evaluation for multi-user MIMO IEEE 802.11ac wireless LAN system," 2012 14th International Conference on Advanced Communication Technology (ICACT), pp. 804 808.
- [62] Roger Pierre Fabris Hoefel, "IEEE 802.11ac: On performance of lattice-reduction successive interference cancellation OFDM MIMO receivers," 2014 International Conference on Advanced Technologies for Communications (ATC 2014), pp. 691 - 696
- [63] Roger Pierre Fabris Hoefel, "Multi-user OFDM MIMO in IEEE 802.11ac WLAN: A simulation framework to analysis and synthesis," 2013 IEEE Latin-America Conference on Communications, pp. 1 6
- [64] Syed Moinuddin Bokhari B, Karthika S, Bhagyaveni M A, "Optimal Peak Power Ordering (OPPO) in ZF-SIC for IEEE 802.11ac industrial standard," 2015 IEEE International Conference on Electrical, Computer and Communication Technologies (ICECCT), pp. 1 6
- [65] Oscar Bejarano, Eugenio Magistretti, Omer Gurewitz, Edward W. Knightly, "MUTE: Sounding inhibition for MU-MIMO WLANs," 2014 Eleventh Annual IEEE International Conference on Sensing, Communication, and Networking (SECON), pp. 135 143
- [66] Junsu Choi, Sunghyun Choi, Kwang Bok Lee, "Sounding Node Set and Sounding Interval Determination for IEEE 802.11ac MU-MIMO," IEEE Transactions on Vehicular Technology, 2016, Vol 65, Issue: 12, pp. 10069 -10074

- [67] Narendra Anand, Jeongkeun Lee, Sung-Ju Lee, Edward W. Knightly, "Mode and user selection for multi-user MIMO WLANs without CSI," 2015 IEEE Conference on Computer Communications (INFOCOM), pp. 451 459
- [68] ns-3 Network Simulator. Available from: http://www.nsnam.org
- [69] D. Xia, "Experimental Study on the Performance of Rate Adaptation Algorithm in IEEE 802.11g Networks", Master thesis, Victoria University of Wellington, 2013.
- [70] Chunhui Zhu, Anirudh Bhatt, Youngsoo Kim, Osama Aboul-magd, Chiu Ngo, "MAC enhancements for downlink multi-user MIMO transmission in next generation WLAN," 2012 IEEE Consumer Communications and Networking Conference (CCNC), pp 832 837.
- [71] Chunhui Zhu, Chiu Ngo, Anirudh Bhatt, Youngsoo Kim, "Enhancing WLAN backoff procedures for downlink MU-MIMO support," 2013 IEEE Wireless Communications and Networking Conference (WCNC), pp. 368 373.
- [72] https://blog.yate.ro/2015/07/30/an-introduction-to-the-lte-mac-scheduler/
- [73] http://www.cisco.com/c/en/us/solutions/collateral/enterprise-networks/802-11ac-solution/q-and-a-c67-734152.pdf
- [74] Hu Jin, Bang Chul Jung, Dan Keun Sung, "A Tradeoff Between Single-User and Multi-User MIMO Schemes in Multi-Rate Uplink WLANs," IEEE Transactions on Wireless Communications, 2011, Vol. 10, No. 10, pp 3332 3342
- [75] Hu Jin, Bang Chul Jung, Ho Young Hwang, Dan Keun Sung, "A Throughput Balancing Problem between Uplink and Downlink in Multi-user MIMO-Based WLAN Systems," IEEE Wireless Communications and Networking Conference, 2009. WCNC 2009.
- [76] Hu Jin, Bang Chul Jung, Ho Young Hwang, Dan Keun Sung "Performance Comparison of Uplink WLANs with Single-User and Multi-User MIMO Schemes," IEEE Wireless Communications and Networking Conference, 2008. WCNC 2008.

- [77] Yuanhang Cai, Wei Xi, Kun Zhao, Jinsong Han, Jizhong Zhao "Smart retransmission for CSI recovery in uplink multi-user MIMO networks." 2016 IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS), Year: 2016, Pp: 1061 1062,
- [78] Lin X. Cai, Hangguan Shan, Weihua Zhuang, Xuemin Shen, Jon W. Mark, Zongxin Wang, "A Distributed Multi-User MIMO MAC Protocol for Wireless Local Area Networks," IEEE Global Telecommunications Conference, 2008. IEEE GLOBECOM 2008, IEEE Xplore
- [79] Der-Jiunn Deng, Kwang-Cheng Chen, Rung-Shiang Cheng "IEEE 802.11ax: Next generation wireless local area networks," 10th International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness, 2014, Pp: 77 82.
- [80] Jinnyeong Lee, Kyung Jun Choi, Kwang Soon Kim "Massive MIMO full-duplex for high-efficiency next generation WLAN systems," 2016 International Conference on Information and Communication Technology Convergence (ICTC), 2016, Pp. 1152 - 1154
- [81] Ruizhi Liao, Boris Bellalta, Miquel Oliver, "DCF/USDMA: Enhanced DCF for uplink SDMA transmissions in WLANs," 2012 8th International Wireless Communications and Mobile Computing Conference (IWCMC), Pp. 263 268.
- [82] Mengjie Xie, Tat Ming Lok, "Access point selection and auction-based scheduling in uplink MU-MIMO WLANs," 2016 IEEE International Conference on Communications (ICC), Pp. 1 6.
- [83] Jelena Mirkovic, Bernhard Walke, Jordi Gomez Garcia, "Channel aware scheduling in MIMO based WLANs in the presence of channel uncertainty," 2008 IEEE International Symposium on Wireless Communication Systems, Pp: 406 - 410.
- [84] Saad Biaz, Shaoen Wu, "Rate Adaptation Algorithms for IEEE 802.11 Networks: A Survey and Comparison", 2008, IEEE Symposium on Computers and Communications, Pgs 130-136.

- [85] http://www.mwnl.snu.ac.kr/~schoi/publication/Conferences/12-WoWMoM-Kim.pdf
- [86] http://mobile.snu.ac.kr/mcl\_list/papers/journal/IEEETranMoCum201212\_choish.pdf
- [87] http://www.mwnl.snu.ac.kr/~schoi/publication/Journals/13-TMC-LEE.pdf
- [88] Telecommunication Standardization Sector Of Itu G.109 Series G: Transmission Systems And Media, Digital Systems And Networks, International telephone connections and circuits General definitions Definition of categories of speech transmission quality
- [89] http://citeseerx.ist.psu.edu/