
ANDREAS F. MOLISCH

List of Publications

Research publications

Publications authored, co-authored, or edited

- **4 books,** p. 2
- **19 book chapters,** p. 3
- **>200 journal papers**
 - 208 in international journals p. 5
 - 4 in national journals p. 16
- **~300 reviewed conference papers**
 - 251 at international conferences p. 17
 - 52 at national/continental conferences p. 29
- **27 tutorials** p. 33
- **numerous other contributions** (invited lectures, unreviewed papers, etc.) p. 35

Patents

- **87 patents** p. 44

Industrial contributions

- **68 standardization contributions** p. 49
- **numerous research reports**

Citation Statistics

h-index: 76 (Google Scholar)

Number of citations: ~30,000 (Google Scholar):

Scientific areas of the publications

The publications (research papers, patents, and industrial contributions) cover the following areas

- *Wireless propagation channels*
- *Ultrawideband communications, ranging, and localization*
- *Multi-antenna systems (smart antennas and MIMO)*
- *Sensor networks, ad-hoc networks and cooperative communications*
- *Wireless Video Networks*
- *BER computations: unequalized wireless systems, OFDM, and CDMA*
- *Radiation trapping*
- *Surface acoustic wave filters*

BOOKS**2006**

- B-4 M. G. diBenedetto, T. Kaiser, **A. F. Molisch**, I. Oppermann, C. Politano, and D. Porcino (eds.), "UWB. Communication Systems--A Comprehensive .Overview", Hindawi Publishing (2006).

This edited book provides an overview of all aspects of ultrawideband communications, including propagation channels, system design, international standardization and frequency regulation.

2005/2011

- B-3 **A. F. Molisch**, "Wireless Communications", 622+xlvi pages, IEEE Press – Wiley (2005); translation into Chinese, PHEI (2008). Second edition, IEEE Press – Wiley (2011).

A textbook on wireless for advanced undergraduate and graduate students as well as practicing engineers and researchers. It provides a complete overview of the physical layer of wireless communications, including channels and propagation, transceivers (modulation, coding, multiple access), and a description of standardized systems. A second edition appeared in early 2011.

2000

- B-2 **A.F. Molisch** (ed.), "Wireless wideband digital communications", 547+xvi pages, Prentice-Hall (2000); translation into Chinese, PHEI (2002).

An (edited) research monograph that describes the effects of using wide bandwidths on the wireless transmission of data. Both the negative (error floor) and positive (enhanced diversity) effects are pointed out. All common wideband methods, including single-carrier transmission with and without equalizers, CDMA, and OFDM, are discussed.

1998

- B-1 **A.F. Molisch** and B.P. Oehry, "Radiation trapping in atomic vapors", 510+xxvi pages, Oxford University Press, Oxford, U.K. (1998).

A comprehensive description of the area of radiation trapping, where resonance radiation created by one atom might be absorbed and reemitted by another atom, and this process might be repeated multiple times. Though the topic has been studied in the literature for many years, this book is the first comprehensive and self-consistent description of the field.

BOOK CHAPTERS**2017**

- BC-19 S. Avestimehr and **A. F. Molisch**, “Distributed caching for enhancing communications efficiency”, in M. Chiang (ed.), “Fog Networks”, Wiley (2017).

2016

- BC-18 **A. F. Molisch**, “3D Propagation Channels: Modeling and Measurements”, in J. Zhang and F. Luo, “Signal Processing for 5G: Algorithms and Implementations”, Wiley (2015), to appear.
- BC-17 **A. F. Molisch**, M. Ji, J. Kim, A. Tehrani, D. Burghal “Device-to-Device Communications”, in S. Talwar and R. Vannithamby, “Towards 5G: Applications, Requirements & Candidate Technologies”, Wiley (2015) – to appear.

2012

- BC-16 **A. F. Molisch**, “Propagation and channel modeling principles”, in G. de la Roche, A. A. Glazunov, and B. Allen, “LTE Advanced and Beyond Wireless Networks: Channel Modeling and Propagation”, Wiley (2012).
- BC-15 L. Bernado, N. Czink, T. Zemen, A. Paier, F. Tufvesson, C. Mecklenbraueker, and **A. F. Molisch**, “Vehicular channels”, in G. de la Roche, A. A. Glazunov, and B. Allen, “LTE Advanced and Beyond Wireless Networks: Channel Modeling and Propagation”, Wiley (2012)
- BC-14 L. Greenstein, M. Shafi, and **A. F. Molisch**, “Propagation effects in cognitive radio”, in E. Biglieri et al. (eds.), “Cognitive Radio Principles”, Cambridge University Press (2012).

2011

- BC-13 Y. Tian, C. Yang, and **A. F. Molisch**, “Uplink Centralized Joint Detection”, in P. Marsch, G. Fettweis (ed.), “Coordinated Multi-Point in Mobile Communications”, Cambridge University Press (2011).
- BC-12 **A. F. Molisch**, N. B. Mehta, and S. Draper, “Cooperative Communications for Reliability”, in I. Guvenc, S. Gezici, Z. Sahinoglu, and U. Kozat, “Reliable Communications for Short-Range Wireless Systems”, Cambridge University Press (2011).

2006

- BC-11 **A. F. Molisch**, “Introduction to UWB signals and systems”, in E. Okon, B. Allen, W. Malik, D. Edwards, and A. K. Brown (eds.), “Ultra Wideband: Antennas and Propagation for Communications, Radar and Imaging”, Wiley, (2006).
- BC-10 **A. F. Molisch** and H. Hofstetter, “The COST 273 MIMO channel model”, in L. Correia (ed.), “Mobile Broadband Multimedia Networks”, Academic Press, (2006).
- BC-9 N. Mehta and **A. F. Molisch**, “Antenna selection in MIMO systems,” in G. Tsoulos (ed.), “MIMO antenna technology for wireless communications,” CRC press (2006).

2005

- BC-8 **A. F. Molisch** and F. Tufvesson, “MIMO Channel Capacity and Measurements”, in T. Kaiser (ed.), “Smart antennas in Europe – state of the art”, EURASIP Publishing, (2005)
- BC-7 **A. F. Molisch** et al., “Ultrawideband Propagation Channels”, in “UWB communications systems – a comprehensive overview”, G. DiBenedetto et al. (ed.), EURASIP Publishing, 2006.

2004

- BC-6 **A.F. Molisch** and F. Tufvesson, "Multipath propagation models for broadband wireless systems", Chapter 2 in "Digital Signal Processing for Wireless Communications Handbook", CRC Press, M. Ibnkahla (ed.), invited, pp. 2.1-2.43, 2004.

2001

- BC-5 M. Steinbauer and **A. F. Molisch** (eds.), "Directional channel models", Chapter 3.2 (pp. 132-193) of "Flexible Personalized Wireless Communications", L. Correia (ed.), Wiley, 2001
- BC-4 **A. F. Molisch**, "DECT and adaptive sampling", in "Flexible Personalized Wireless Communications", L. Correia (ed.), Wiley, 2001

2000

- BC -3 **A. F. Molisch**, "Introduction to wideband wireless systems", Part 1 (pp. 1-62) of A.F. Molisch (ed.), "Wireless wideband digital communications", Prentice-Hall, 2000
- BC -2 **A. F. Molisch**, "Unequalized systems", Part 2 (pp. 63-154) of A.F. Molisch (ed.), "Wireless wideband digital communications", Prentice-Hall, 2000

1999

- BC -1 L.B. Lopes and **A.F. Molisch**, "Research into performance and enhancement of second generation systems: GSM and DECT", pp. 209-284 in "Digital Mobile Radio - the view of COST 231", E. Damosso and L. Correia (eds.), European Union Publications 1999.

PAPERS IN INTERNATIONAL REVIEWED JOURNALS

2017

- J-215 R. He, B. Ai, **A. F. Molisch**, G. L. Stuber, Q. Li, Z. Zhong, J. Yu, "Clustering Enabled Wireless Channel Modeling using Big Data Algorithms", *IEEE Communications Magazine*, in press (2017).
- J-214 S. Aditya, **A. F. Molisch**, N. Rabeah, and H. M. Behairy, "Localization of Multiple Targets With Identical Radar Signatures in Multipath Environments With Correlated Blocking", *IEEE Trans. Wireless Comm.*, in press (2017).
- J-213 Z. Li, S. Han, and **A. F. Molisch**, "User-Centric Virtual Sectorization for Millimeter-Wave Massive MIMO Downlink", *IEEE Trans. Wireless Comm.*, in press (2017).
- J-212 D. Burghal, A. S. Tehrani, and **A. F. Molisch**, "On Expected Neighbor Discovery Time With Prior Information: Modeling, Bounds and Optimization", *IEEE Trans. Wireless Comm.*, in press (2017).
- J-211 A. Karttunen, **A. F. Molisch**, S. Hur, J. Park, J. Zhang, "Spatially Consistent Street-by-Street Path Loss Model for 28 GHz Channels in Micro Cell Urban Environments," *IEEE Trans. Wireless Comm.*, **11**, 7538-7550 (2017).
- J-210 R. He, Y. Li, B. Ai, **A. F. Molisch**, V. Kristem, Z. Zhong, and J. Yu, "A Kernel-Power-Density Based Algorithm for Channel Multipath Components Clustering," *IEEE Trans. Wireless Comm.*, **11**, 7138-7151 (2017).
- J-209 R. Wang, O. Renaudin, C. U. Bas, S. Sangodoyin, and **A. F. Molisch**, "High Resolution Parameter Estimation for Time-varying Double Directional V2V Channel", *IEEE Trans. Wireless Comm.*, **11**, 7264-7275 (2017).
- J-208 S. Aditya, H. Dhillon, **A. F. Molisch**, and H. Behairy, "Asymptotic Blind-spot Analysis of Localization Networks under Correlated Blocking using a Poisson Line Process", *IEEE Comm. Lett.*, accepted (2017).
- J-207 T. S. Rappaport, Y. Xing, G. McCartney, **A. F. Molisch**, E. Mellios, J. Zhang, "Overview of Millimeter Wave Communication for Fifth-Generation (5G) Wireless Networks - with a focus on Propagation Models", *IEEE Trans. Antennas and Propagation*, **65**, 6213-6230 (2017).
- J-206 J. Ko, Y. J. Cho, S. Hur, T. Kim, J. Park, **A. F. Molisch**, K. Haneda, M. Peter, D. J. Park, D. H. Choi, "Millimeter-Wave Channel Measurements and Analysis for Statistical Spatial Channel Model in In-Building and Urban Environments at 28 GHz", *IEEE Trans. Wireless Comm.*, in press (2017).
- J-205 K. Guan, G. Li, T. Kuerner, **A. F. Molisch**, B. Peng, B. Hui, J. Kim, and Z. Zhong, "On Millimeter Wave and THz Mobile Radio Channel for Smart Rail Mobility", *IEEE Trans. Vehicular Techn.*, **66**, 5658 - 5674 (2016).
- J-204 B. Chen, C. Yang, and **A. F. Molisch**, "Cache-enabled Device-to-Device Communications: Offloading Gain and Energy Cost", *IEEE Trans. Wireless Comm.*, **16**, 4519-4536 (2017).
- J-203 M. Shafi, **A. F. Molisch**, P. J. Smith, T. Haustein, P. Zhu, P. deSilva, F. Tufvesson, A. Benjebour, and G. Wunder, "5G: A Tutorial Overview of Standards, Trials, Challenges, Deployment and Practice", *IEEE JSAC*, special issue on 5G, in press (2017).
- J-202 **A. F. Molisch**, V. Ratnam, S. Han, Z. Li, S. Nguyen, L. Li, K. Haneda, "Hybrid beamforming for massive MIMO – a survey", *IEEE Communications Magazine*, **55** (9), 134-141 (2017).
- J-201 V. Kristem, S. Sangodoyin, C. U. Bas, M. Kaeske, J. Lee, C. Schneider, M. Sommerkorn, J. Zhang, R. S. Thomae, **A. F. Molisch**, "3D MIMO Outdoor-to-Indoor Propagation Channel Measurement", *IEEE Trans. Wireless Comm.*, **16**, 4600-4613 (2017).
- J-200 Z. Li, S. Han, and **A. F. Molisch**, "Optimizing Channel-Statistics-Based Analog Beamforming for Millimeter-Wave Multi-User Massive MIMO Downlink", *IEEE Trans. Wireless Comm.*, **16**, 4288-4303 (2017).

- J-199 A. E. Willner, Y. Ren, G. Xie, Y. Yan, L. Li, Z. Zhao, J. Wang, M. Tur, **A. F. Molisch**, S. Ashrafi, "Recent advances in high-capacity free-space optical and radio-frequency communications using orbital angular momentum multiplexing", *Phil. Trans. R. Soc. A*, **375**, 20150439 (2017)
- J-198 SW Jeon, SN Hong, M Ji, G Caire, **AF Molisch**, "Wireless multihop device-to-device caching networks," *IEEE Transactions on Information Theory*, (2017).
- J-197 Y. Ren, L. Li, G. Xie, Y. Yan, N. Ahmed, Y. Cao, A. Willner, C. Bao, Z. Wang, C. Liu, M. Ziyadi, S. Talwar, S. Sajuyigbe, S. Ashrafi, M. Tur, G. Caire, **A. F. Molisch**, and A. Willner, "Line-of-sight Millimeter-wave Communications using Orbital Angular Momentum Multiplexing Combined with Conventional Spatial Multiplexing", *IEEE Trans. Wireless Comm.* (2017).
- J-196 A. Karttunen, C. Gustafson, **A. F. Molisch**, K. Haneda, and J. Jarvelainen, "Censored Multipath Component Cross-Polarization Ratio Modeling", *IEEE Wireless Comm. Lett*, **6**, 82-85 (2017).

2016

- J-195 G. Xie, Z. Zhao, Y. Yan, L. Li, Y. Ren, N. Ahmed, Y. Cao, A. Willner, C. Bao, Z. Wang, C. Liu, M. Ziyadi, S. Talwar, S. Sajuyigbe, S. Ashrafi, M. Tur, **A. F. Molisch**, and A. Willner, "Demonstration of Tunable Steering and Multiplexing of Two 28 GHz Data-Carrying Orbital Angular Momentum Beams Using Antenna Array", *Scientific Reports* (2016).
- J-194 V. Ratnam, **A. F. Molisch**, and H. Papadopoulos, "MIMO Systems with Restricted Pre/Post-coding – Capacity Analysis based on Coupled Doubly-correlated Wishart Matrices", *IEEE Trans. Wireless Comm.*, **15**, 8537-8550 (2016).
- J-193 Y. Yan, L. Li, G. Xie, C. Bao, P. Liao, H. Huang, Y. Ren, N. Ahmed, Z. Zhao, Z. Wang, N. Ashrafi, S. Ashrafi, S. Talwar, S. Sajuyigbe, M. Tur, **A. F. Molisch** and A. E. Willner, "Multipath Effects in Millimetre-Wave Wireless Communication using Orbital Angular Momentum Multiplexing", *Scientific Reports* **6**, Article number: 33482 (2016).
- J-192 H. Feng and **A. F. Molisch**, "Diversity Backpressure Scheduling and Routing with Mutual Information Accumulation in Wireless Ad-hoc Networks", *IEEE Trans. Information Theory*, **62**, 7299-7323 (2016).
- J-191 D. Liu, B. Chen, C. Yang, and **A. F. Molisch**, "Caching at the Wireless Edge: Design Aspects, Challenges and Future Directions, *IEEE Comm. Mag.*, **54** (9), 22-28 (2016).
- J-190 A. Karttunen, C. Gustafson, **A. F. Molisch**, R. Wang, S. Hur, J. Park, J. Zhang, "Path Loss Models with Distance Dependent Weighted Fitting and Estimation of Censored Path Loss Data", invited paper, *IET Microwaves, Antennas, and Propagation*, DOI: 10.1049/iet-map.2016.0042 (2016).
- J-189 S. Sangodoyin, V. Kristem, **A. F. Molisch**, R. He, F. Tufvesson, H. Behairy, "Statistical Modeling of Ultrawideband MIMO Propagation Channel in a Warehouse Environment", *IEEE Trans. Antennas Propagation*, **15**, 6527-6540 (2016).
- J-188 T. Zhang, **A. F. Molisch**, Y. Shen, Q. Zhang, and M. Z. Win, "Joint power and bandwidth allocation in cooperative wireless localization networks", *IEEE Trans. Wireless Comm.*, **15**, 6527 - 6540 (2016).
- J-187 T. Zhang, C. Qin, Y. Shen, **A. F. Molisch**, Q. Zhang, and M. Z. Win, "Joint Power and Spectrum Allocation in Wireless Localization Networks", *IEEE Trans. Comm*, **64**, 3733 - 3745 (2016).
- J-186 A. Willner, G. Xie, Guodong, L. Li, Y. Ren, Y. Yan, N. Ahmed, Z. Zhao, Z. Zhe; Z. Wang, C. Liu, A. Willner, N. Ashrafi, S. Ashrafi, M. Tur, **A. F. Molisch**, "Design challenges and guidelines for free-space optical communication links using orbital-angular-momentum multiplexing of multiple beams", *Journal of Optics*, **18**, Article 074014 (2016).
- J-185 R. He, B. Ai, G. Wang, K. Guan, Z. Zhong **A. F. Molisch**, C. Briso-Rodriguez, C. Oestges, "High-Speed Railway Communications: from GSM-R to LTE-R", *IEEE Vehicular Technology Magazine*, **11**(3), 49-58 (2016).
- J-184 R. He, W. Chen, B. Ai, **A. F. Molisch**, W. Wang, Z. Zhong, J. Yu, and S. Sangodoyin, "On the

Clustering of Radio Channel Impulse Responses Using Sparsity-Based Methods”, *IEEE Trans. Antennas and Propagation*, **64**, 2465 - 2474 (2016).

- J-183 N. Ahmed, Z. Zhao, L. Li, H. Huang, M. Lavery, P. Liao, Y. Yan, Z. Wang, G. Xie, Y. Ren, A. Almainan, A. Willner, **A. F. Molisch**, M. Tur, and A. Willner “Mode-Division-Multiplexing of Multiple Bessel-Gaussian Beams Carrying Orbital-Angular-Momentum for Obstruction-Tolerant Free-Space Optical and Millimetre-Wave Communication Links”, *Scientific Reports (Nature)*, **6**, Article 22082 (2016).
- J-182 S. Hur, S. Baek, B. Kim, Y. Chang, **A. F. Molisch**, T. S. Rappaport, K. Haneda, and J. Park, “Proposal on Millimeter-Wave Channel Modeling for 5G Cellular System”, *IEEE J Sel. Topics Signal Proc.*, **10**, 454-469 (2016).
- J-181 K. Witrisal, P. Meissner, E. Leitinger, Y. Shen, C. Gustafson, F. Tufvesson, K. Haneda, D. Dardari, **A. F. Molisch**, A. Conti, and M. Z. Win, “High-Accuracy Localization for Assisted Living”, *IEEE Signal Processing Magazine*, **33(2)**, 59-70 (2016).
- J-180 S. Sangodoyin, S. Niranjayan, and **A. F. Molisch**, “A Measurement-based Model for Outdoor Near-ground Ultrawideband Channels”, *IEEE Trans. Antennas Prop.* **64**, 740-751 (2016).
- J-179 M. Ji, G. Caire, and **A. F. Molisch**, “Fundamental Limits of Caching in Wireless D2D Networks”, *IEEE Trans.* **62**, 849-869 (2016).
- J-178 M. Ji, G. Caire, and **A. F. Molisch**, “Wireless Device-to-Device Caching Networks: Basic Principles and System Performance”, *IEEE J. Selected Areas Comm.*, **34**, 176-189 (2016).
- J-177 J. Kim, G. Caire, and **A. F. Molisch**, “Quality-Aware Streaming and Scheduling for Device-to-Device Video Delivery”, *IEEE/ACM Transactions on Networking*, **24**, 2319 – 2331 (2016).
- J-176 V. Ratnam, **A. F. Molisch**, and G. Caire “Capacity analysis of Interlaced Clustering in a Distributed Transmission System with/without CSIT,” *IEEE Trans. Wireless Comm.*, **15**, 2629 – 2641 (2016).

2015

- J-175 M. Ji, G. Caire, and **A. F. Molisch**, “The Throughput-Outage Tradeoff of Wireless One-Hop Caching Networks”, *IEEE Trans. Information Theory*, **61**, 6833 – 6859 (2015).
- J-174 D. Burghal and **A. F. Molisch**, “Efficient Channel State Information Acquisition for Device-to-Device Networks”, *IEEE Trans. Wireless Comm.*, DOI: 10.1109/TWC.2015.2480774.
- J-173 Y. Ren, Z. Wang, G. Xie, L. Li, Y. Cao, C. Liu, P. Liao, Y. Yan, N. Ahmed, Z. Zhao, N. Ashrafi, S. Ashrafi, R. D. Linquist, R. Bock, M. Tur, **A. F. Molisch** and A. E. Willner, “Free-space Optical Communications Using Orbital-Angular-Momentum Multiplexing Combined with MIMO-Based Spatial Multiplexing”, *Optics Letters*, **40**, 4210-4213 (2016).
- J-172 G. Caire and **A. F. Molisch**, Femto-caching and D2D communications: a new paradigm for Video-Aware Wireless Networks”, *Intel Research Journal*, **19**, 92-119 (2015).
- J-171 A. E. Willner, H. Huang, Y. Yan, Y. Ren, N. Ahmed, G. Xie, C. Bao, L. Li, Y. Cao, Z. Zhao, J. Wang, M. P. J. Lavery, M. Tur, **A. F. Molisch**, S. Ashrafi, N. Ashrafi, “Optical Communications Using Orbital Angular Momentum Beams,” *Advances in Optics and Photonics*, **7**, 66-106 (2015).
- J-170 G. Xie, L. Li, Y. Ren, H. Huang, Y. Yan, N. Zhmed, Z. Zhao, M. P. J. Lavery, S. Ashrafi, N. Ashrafi, M. Tur, **A. F. Molisch**, A. E. Willner, “Performance Metrics and Design Considerations for a Free-Space Optical Orbital-Angular-Momentum Multi-plexed Communication Link”, *Optica*, **2**, 357-365 (2015)
- J-169 Z. Jiang, **A. F. Molisch**, G. Caire, and Z. Niu, “Achievable Rates of FDD Massive MIMO Systems with Spatial Channel Correlation”, *IEEE Trans. Wireless Comm.*, **14**, 2868-2882 (2015).
- J-168 L. Bernado, T. Zemen, F. Tufvesson, A. F. Molisch, and C. Mecklenbrauker, “Time- and Frequency-Varying K-Factor of Non-Stationary Vehicular Channels for Safety Relevant Scenarios”, *IEEE Trans. Int. Comm. Systems*, **16**, 2007-1017 (2015).

- J-167 R. He, B. Ai, Z. Zhong, **A. F. Molisch**, J. Ding, and Y. Lang, "A Measurement-Based Stochastic Channel Model for High-Speed Railways", *IEEE Trans. Intelligent Transportation Systems*, **16**, 1120-1135 (2015).

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- J-166 Y. Yan, M. Lavery, G. Xie, H. Huang, N. Ahmed, C. Bao, Y. Ren, Y. Cao, L. Li, **A. F. Molisch**, M. Tur, M. J. Padgett, A. Willner, "32-Gbit/s mm-wave Communications with Orbital Angular Momentum Multiplexing", *Nature Communications*, **5**, Article number: 4876, (2014).
- J-165 A. Meijerink and **A. F. Molisch**, "On the application of the Saleh-Valenzuela model in UWB channels", *IEEE Trans. Antennas and Propagation*, **62**, 4789-4793 (2014).
- J-164 **A. F. Molisch** and F. Tufvesson, "Propagation channel models for next-generation wireless communications systems", *IEICE Trans. (invited)* **E-97B**, 2022-2034 (2014)
- J-163 **A. F. Molisch**, G. Caire, D. Ott, J. R. Foerster, D. Bethanabhotla, and M. Ji, "Caching Eliminates the Wireless Bottleneck in Video-Aware Wireless Networks", *Hindawi Advances in Electrical Engineering*, Oct. 2014.
- J-162 J. Kim and **A. F. Molisch**, "Fast Millimeter-Wave Beam Training with Receive Beamforming", *J. Comm Networking*, **16**, 512-522, (2014).
- J-161 R. He, **A. F. Molisch**, F. Tufvesson, Z. Zhong, B. Ai, T. Zhang, "Vehicle-to-Vehicle Propagation Models With Large Vehicle Obstructions", *IEEE Trans. Intelligent Transportation Systems*, **15**, 2237-2248.
- J-160 A. Adhikary, E. Al-Safadi, M. Samimi, R. Wang, G. Caire, T. S. Rappaport, and **A. F. Molisch**, "Joint Spatial Division and Multiplexing for mm-Wave Channels", *IEEE JSAC*, **32**, 1239- 1255 (2014).
- J-159 J. Shen and **A. F. Molisch**, "Estimation of Multiple Target Location in Multi-Path Wireless Systems", *IEEE Trans. Wireless Comm.*, **13**, 4547-4559 (2014).
- J-158 V. Kristem, **A. F. Molisch**, S. Niranjayan, and O. Sangodoyin, "Coherent UWB Ranging in the presence of Multiuser Interference", *IEEE Trans. Wireless Comm*, **13**, 4424-4439 (2014).
- J-157 N. Golrezai, P. Mansoufard, **A. F. Molisch**, and A. G. Dimakis, "Base-Station Assisted Device-to-Device Communications for High-Throughput Wireless Video Networks", *IEEE Trans. Wireless Comm*, **13**, 3665-3676 (2014)..
- J-156 N. Golrezai, A. G. Dimakis, and **A. F. Molisch**, "Scaling Behaviors of Wireless Device-to-Device Communications with Distributed Caching", *IEEE Trans. Information Theory*, **60**, 4286-4298 (2014).
- J-155 R. Rogalin, O.Y.Bursalioglu, H. Papadopoulos, G. Caire, **A.F. Molisch**, A. Michaloliakos, V. Balan, K. Psounis, "Scalable Synchronization and Reciprocity Calibration for Distributed Multiuser MIMO", *IEEE Trans. Wireless Comm.*, **13**, 1815 – 1831 (2014).
- J-154 S. Han, C. Yang, and **A. F. Molisch**, "Spectrum and Energy Efficient Cooperative Base Station Doze", *IEEE J. Selected Areas Comm*, **32**, 285-296 (2014)
- J-153 L. Bernardo, T. Zemen, F. Tufvesson, **A. F. Molisch**, and C. Mecklenbrauker, "Delay and Doppler Spreads of Non-Stationary Vehicular Channels for Safety Relevant Scenarios", *IEEE Trans. Vehicular Techn.*, **63**, 82-93 (2014).

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- J-152 K. Shanmugam, N. Golrezai, A. G. Dimakis, **A. F. Molisch**, and G. Caire, "FemtoCaching: Wireless Video Content Delivery through Distributed Caching Helpers", *IEEE Trans. Information Theory*, **59**, 8402 - 8413 (2013).

- J-151 J. Kim, Y. Tian, **A. F. Molisch**, and S. Mangold, "Joint Scalable Coding and Routing for 60 GHz Real-Time Live HD Video Streaming Applications", *IEEE Trans. Broadcasting*, **59**, 500-512 (2013).
- J-150 V. Kristem, N. B. Mehta, and **A. F. Molisch**, "Training for Antenna Selection in Time-varying Channels: Optimal Selection, Energy Allocation, and Energy Efficiency Evaluation", *IEEE Trans. Comm*, **61**, 2295-2305 (2013).
- J-149 Q. Zhang, C. Yang, and **A. F. Molisch**, "Downlink Base Station Cooperative Transmission under Limited-Capacity Backhaul", *IEEE Trans. Wireless Comm.* **12**, 3746-3759 (2013).
- J-148 C. Yang, S. Han, X. Hou, and **A. F. Molisch**, "From Theory to Practice: How to Design CoMP to Achieve its Promised Potential?", *IEEE Wireless Communications Magazine*, **20**, issue 1, 67-74 (2013).
- J-147 N. Golrezai, **A. F. Molisch**, A. G. Dimakis, and G. Caire, "Femtocaching and Device-to-Device Collaboration: A New Architecture for Wireless Video Distribution", *IEEE Comm. Mag.*, **51**, issue 4, 142-149 (2013).
- J-146 R. He, Z. Zhong, B. Ai, J. Ding, Y. Lang, and **A. F. Molisch**, "Short-Term Fading Behavior in High-Speed Rail Cutting Scenario: Measurements, Analysis, and Statistical Models", *IEEE Trans. Antennas and Propagation*, **61**, 2209-2222 (2013).
- J-145 R. He, Z. Zhong, B. Ai, G. Wang, J. Ding, and **A. F. Molisch**, "Measurements and Analysis of Channel Fading Behavior in the Railway Viaduct Scenario", *IEEE Trans. Wireless Comm.*, **12**, 794-805 (2013).

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- J-144 T. Zemen and **A. F. Molisch**, "Adaptive Reduced-Rank Time-Variant Channel Estimation Using Subspace Selection", *IEEE Trans. Vehicular Techn.*, **61**, 4042 – 4056, 2012.
- J-143 J. Shen and **A. F. Molisch**, "Indirect Path Detection Based on Wireless Propagation Measurements", *IEEE Trans. Wireless Comm.*, **11**, 4482-4493 (2012).
- J-142 N. Michelusi, U. Mitra, **A. F. Molisch**, and M. Zorzi, "UWB Sparse/Diffuse Channels, Part II: Estimator Analysis and Practical Channels", *IEEE Trans. Signal Process.* **60**, 5320 – 5333 (2012).
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TUTORIALS AT INTERNATIONAL CONFERENCES**2017**

- T-28 **A. F. Molisch**, “mm-wave propagation channel measurement and modeling”, half-day tutorial at Milcom, Baltimore, MA, USA

2009

- T-27 **A. F. Molisch**, N. B. Mehta, and J. Tao, “IMT-Advanced Systems: Enabling Technologies and Standardizations “ Half-day tutorial at ICC, Dresden, Germany

2008

- T-26 **A. F. Molisch**, “MIMO systems and spatial channels“
Half-day tutorial at MILCOM, San Diego, USA
- T-25 **A. F. Molisch** and M. Z. Win, “Ultra-wide-bandwidth systems”
Half-day tutorial at MILCOM, San Diego, USA
- T-24 **A. F. Molisch**, “MIMO propagation channels“
Half-day tutorial at URSI General Assembly, Chicago, IL, USA
- T-23 **A. F. Molisch**, “MIMO systems and spatial channels“
Full-day tutorial at IEEE Antennas and Propagation Symposium, San Diego, CA, USA
- T-22 M. Z. Win and **A. F. Molisch**, “Ultra-wide-bandwidth systems”
Half-day tutorial at IEEE International Conference on Communications, Beijing, China

2007

- T-21 **A. F. Molisch**, “Multiple-antenna systems “
Full-day tutorial at IEEE Antennas and Propagation Symposium, Honolulu, HI, USA

2006

- T-20 **A. F. Molisch**, E. Bonek, and F. Tufvesson, “Measurement and modelling of wireless propagation channels for MIMO and UWB “
Full-day tutorial at joint ACORN-NEWCOM workshop, Vienna, Austria

2005

- T-19 **A. F. Molisch**, „Ultrawideband propagation channels“
Half-day tutorial at IEEE International Conference on Ultrawideband, Zurich, Switzerland

2004

- T-18 M. Z. Win and **A. F. Molisch**, "Ultrawideband systems",
Half-day tutorial at IEEE Globecom ,04, Dallas, USA
- T-17 E. Bonek, K. Hugel, **A. F. Molisch**, and W. Weichselberger, „Smart antennas and MIMO systems“
Full-day tutorial at IEEE ICC ,04, Paris, France
- T-16 M. Z. Win and **A. F. Molisch**, "Ultrawideband systems",
Half-day tutorial at IEEE ICC ,04, Paris, France

2003

- T-15 M. Z. Win and **A. F. Molisch**, "Ultrawideband systems",

Half-day tutorial at IEEE Globecom ,03, San Francisco, USA

- T-14 **A. F. Molisch**, W. Weichselberger, and E. Bonek, “Spatial channels (including MIMO)“
Half-day tutorial at IEEE WPMC Yokosuka, Japan
- T-13 M. Z. Win and **A. F. Molisch**, "Ultrawideband systems",
Half-day tutorial at IEEE Consumer Electronics Conf. Los Angeles ,03, USA
- T-12 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, “Spatial channels and smart antennas”:
Half-day tutorial at IEEE VTC fall 2003, Orlando, USA

2002

- T-11 **A. F. Molisch**, J. Laurila, K. Hugl, and E. Bonek, “MIMO systems”:
Half-day tutorial at IEEE WPMC ,02 Hawaii, USA
- T-10 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, “Spatial channels and smart antennas”:
Full-day tutorial at IEEE PIMRC 2002, Lisbon, Portugal
- T-09 **A. F. Molisch** and H. Asplund, “The COST259 channel model“
Half-day tutorial, COST 273 workshop, Helsinki, Finland
- T-08 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, “Spatial channels and smart antennas”:
Full-day tutorial at IEEE VTC’02, Birmingham, USA
- T-07 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, “Spatial channels and smart antennas”:
Half-day tutorial at IEEE ICC’02, New York, USA

2001

- T-06 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, “Spatial channels and smart antennas”:
Full-day tutorial at IEEE VTC’01, Atlantic City, USA
- T-05 **A. F. Molisch**, A. Kuchar, J. Laurila, M. Toeltsch, M. Steinbauer, and E. Bonek, “Measurement and simulation of spatial mobile radio channels”,
Online Symposium for Electrical Engineers, www.techonline.com
- T-04 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, “Spatial channels and smart antennas”:
Full-day tutorial at EPMCC, Vienna, Austria

2000

- T-03 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, ”Smart antennas in mobile communications”,
Online Symposium for Electrical Engineers, fall 2000, www.techonline.com
- T-02 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, “Spatial channels and smart antennas”:
Full-day tutorial at IEEE PIMRC 2000, London, UK

1999

- T-01 **A. F. Molisch**, A. Kuchar, J. Laurila, and E. Bonek, “Spatial channels and smart antennas”:
Full-day tutorial at IEEE VTC’99, Amsterdam, Netherlands

MISCELLANEOUS**2017**

- M-172 **A. F. Molisch**, “Modulation and multiple access for high-speed train communications”, *Chinese Research Center for Railway Safety and Control, Beijing, China*, invited, July 3rd, 2017.
- M-171 **A. F. Molisch**, “High-Frequency Wireless Propagation Channels - From mm-Wave to THz”, *MARIE DFG Meeting, Darmstadt*, invited keynote (2017).
- M-170 **A. F. Molisch**, A. Karttunen, S. Hur, J. Park, J. Zhang, “Street-by-street pathloss modeling for urban microcells at mm-wave frequencies”, *IEEE Communication Theory Workshop 2017*.
- M-169 “Channel Modeling for 5G mmW Systems,” *International Microwave Symposium 5G Summit*, invited talk, 2017
- M-168 Talk at NIST, January

2016

- M-167 Talk at 5G Silicon Valley summit, November
- M-166 Talk at NIST, June
- M-165 **A. F. Molisch**, “Channels and systems for wireless communications in high-mobility environments”, keynote at *IEEE VTC Fall 2016*, Sept. 20th 2016, Montreal, Canada.

2015

- M-164 **A. F. Molisch**, “Hybrid Transceivers for Massive MIMO – Some Recent Results”, keynote at IEEE Globecom workshop on 5G technology, Dec. 10, 2015, San Diego, CA, USA.
- M-163 **A. F. Molisch**, “Millimeter-wave propagation channels for small cells”, keynote at IEEE Globecom Workshop on Heterogeneous Networks, Dec. 6, 2015, San Diego, CA, USA.
- M-162 **A. F. Molisch**, “Channel Models and Algorithms for Massive MIMO”, lecture at Harbin Institute of Technology, , 2nd Nov. 2015 Shenzhen, China.
- M-161 **A. F. Molisch**, “Higher, denser, wilder: the road to 5G”, plenary talk at IEEE ICC 2015, 2nd Nov. 2015 Shenzhen, China.
- M-160 **A. F. Molisch**, “Channel Models and Algorithms for Massive MIMO”, IEEE Distinguished Lecture, University of Edinburgh, 23rd June 2015, Edinburgh, UK.
- M-159 **A. F. Molisch**, “Femto-caching and device-to-device collaboration for wireless video networks”, IEEE Distinguished Lecture, York University, 22nd June 2015, York, UK.

- M-158 **A. F. Molisch**, “Femto-caching and device-to-device collaboration for wireless video networks”, IEEE Distinguished Lecture, King’s College London, 19th June 2015, London, UK.
- M-157 **A. F. Molisch**, “Channel Models and Algorithms for Massive MIMO”, IEEE Distinguished Lecture, Bristol University, 17th June 2015, Bristol, UK.
- M-156 **A. F. Molisch**, “Femto-caching and device-to-device collaboration for wireless video networks”, keynote at the IEEE ICC Workshop on heterogeneous cells “Smallcell”, June 8th 2015, London, UK.
- M-155 **A. F. Molisch**, “Propagation channel models for next-generation wireless communications systems”, talk at 10th Tsinghua-USC meeting, 21 May 2015, Beijing, China.
- M-154 **A. F. Molisch**, “Femto-caching and device-to-device collaboration for wireless video networks”, invited talk at Beihang University, 19th May 2015, Beijing, China.
- M-153 **A. F. Molisch**, “Towards 5G wireless communications: does the PHY layer still has a role to play?”, invited talk at Beijing Jiaotong University, 18th May 2015, Beijing, China, 2015
- M-152 **A. F. Molisch**, “Propagation channel models for next-generation wireless communications systems”, invited talk at the 34th WWRP meeting, 24th April 2015, San Jose, CA, USA
- M-151 **A. F. Molisch**, Precision Localization of Multiple Passive Targets by Ultrawideband Signals in the Presence of Severe Multipath”, invited talk at the 2nd SIEPC, 28th April 2015, Riyadh, Saudi Arabia.
- M-150 **A. F. Molisch**, “Channel measurements for massive MIMO”, 2nd Brooklyn 5G Summit, 6th April 2015, New York, NY, USA.

2014

- M-149 **A. F. Molisch**, “Algorithms for FDD-based Massive MIMO”, talk at Lund University, 18th Dec. 2014, Lund, Sweden.
- M-148 **A. F. Molisch**, “Channel Models and Algorithms for Massive MIMO”, talk at Samsung Research, 12th Dec. 2014, Richardson, TX, USA.
- M-147 **A. F. Molisch**, “Multipath in localization systems: friend or foe?”, talk at Purdue University, Oct. 2014, Lafayette, IN, USA
- M-146 M. Segura, S. Niranjayan, P. L. Hsu, **A. F. Molisch**, and H. Hashemi, “Experimental Demonstration of Nanosecond-Accuracy Wireless Network Synchronization”, Poster at MHI Research Festival, University of Southern California, Nov. 2014, Los Angeles, CA, USA
- M-145 **A. F. Molisch**, “Channel Models and Algorithms for Massive MIMO”, talk at Tsinghua Univ., Oct. 2014, Beijing, China.

- M-144 **A. F. Molisch**, “Measuring and modeling of 3D MIMO channels”, talk at Panel on 3D-MIMO at IEEE ICC, Oct. 2014, Shanghai, China.
- M-143 **A. F. Molisch**, G. Caire, M. Chiang, and T. S. Rappaport, “Higher, Denser, Wilder – Research on 5G”, Intel Workshop on 5G, Sept. 2014, Santa Clara, CA, USA
- M-142 **A. F. Molisch**, “Distributed Storage and Control”, Introduction to the invited session at the IEEE Communication Theory Workshop, May 2014, Curacao.
- M-141 **A. F. Molisch**, “Localization in Multipath and Interference”, talk at Lund University, May 2014, Lund, Sweden.
- M-140 M. Zhu, J. Vieira, Y. Kuang, **A. F. Molisch**, and F. Tufvesson, “Tracking and positioning using phase information of multi-path components from measured radio channels”, COST IC 1004, Krakow, TD(14)11037 (2014).
- M-139 **A. F. Molisch** and F. Tufvesson, “Propagation channel models for next-generation wireless communications systems”, COST IC 1004, Aalborg, TD(14)10071 (2014).
- M-138 **A. F. Molisch**, “Multipath in localization systems: friend or foe?”, IEEE ICC Workshop in Advances in Network Localization and Navigation, June 14, 2014, Sydney, Australia (*invited keynote*).
- M-137 **A. F. Molisch**, “Device-to-device Communications”, Talk at Intel/Cisco/Verizon, 22nd Jan 2014, Malpitas, CA

2013

- M-136 G. Caire, **A. F. Molisch**, and M. J. Neely, “Video Caching and D2D Networks”, IEEE COMSOC MMTC E-Letter, Sept. 2013
- M-135 L. Hanzo, **A. F. Molisch**, and R. Vida, “IEEE ICC 2013 concludes with thousands of international communications experts attending hundreds of presentations in Budapest, Hungary”, IEEE Communications Magazine, vol. 51, issue 8, 14-18 (2013).
- M-134 **A. F. Molisch**, “Ultrawideband Localization and Radar”, IEEE Distinguished Lecture at University of Manitoba, Canada, 18th July 2013.
- M-133 **A. F. Molisch**, “Cooperative Communications for Cellular and Ad-hoc Networks”, IEEE Distinguished Lecture at University of Florence, 30th June 2013.
- M-132 **A. F. Molisch**, “MIMO systems and propagation channels”, IEEE Distinguished Lecture at University of Padova, 24th June 2013.
- M-131 **A. F. Molisch**, “Ultrawideband Localization and Radar”, IEEE Distinguished Lecture at University of Rome La Sapienza, 18th June 2013.
- M-130 **A. F. Molisch**, “Cooperation techniques in ad-hoc and infrastructure-based wireless networks” Lecture at TU Ilmenau, 23rd May 2013.
- M-129 **A. F. Molisch**, “Ultrawideband propagation channels and their impact on TOA-based geolocation systems”, 16th March 2013.

2012

- M-128 Z. Niu, **A. F. Molisch**, and J. Zhang, “Guest Editorial: Selected Papers from IEEE ICC 2012”, *China Communications*, **10**, vii-viii (2012).
- M-127 K. Haneda, A. Richter, and **A. F. Molisch**, “Modeling the Frequency Dependence of Ultrawideband Spatio-Temporal Indoor Radio Channels”, *IC1004 TD(12)03035*

2011

- M-126 M. Paetzold, **A. F. Molisch**, and C. Oestges, “Trends in Mobile Radio Channels-Modeling, Analysis, and Simulation [From the Guest Editors]”, *IEEE Vehicular Technology Magazine* **6**, issue 2, 21-22 (2011).
- M-125 **A. F. Molisch**, “Using Cellphones as Video Repositories for the Cloud”, Talk at Intel VAWN meeting, Oct. 20th 2011
- M-124 **A. F. Molisch**, “Distributed MIMO Systems”, Keynote at IEEE ICC Distributed Antenna Workshop, Dec. 5th 2011.
- M-123 **A. F. Molisch**, “Wireless propagation channels and their impact on system design”, Keynote at 2nd World Congress on Computer Science and Information Engineering (CSIE 2011), Changchun, China, June 18th 2011.
- M-122 **A. F. Molisch**, “Propagation Aspects of car-to-car communications,” Lecture for IEEE Beijing Chapter, Beihang University, June 13th, 2011
- M-121 **A. F. Molisch**, “Ultrawideband Localization and Radar”, Lecture at TU Vienna, Austria, May 22nd, 2011
- M-120 **A. F. Molisch**, J. Karedal, F. Tufvesson, T. Abbas, A. Paier, C. Mecklenbrauker, L. Bernado, “Propagation Aspects of car-to-car communications,” IEEE RWS Workshop on vehicle-to-vehicle communications, Phoenix, AZ, Jan 15th, 2011.

2010

- M-119 **A. F. Molisch**, “Propagation Aspects of car-to-car communications,” iCore Seminar Series, University of Alberta, Edmonton, Alberta, Canada, USA
- M-118 **A. F. Molisch**, Cross-layer Design in Collaborative Wireless Ad-hoc Networks, Christian Doppler Labor Meeting, 21. June, 2010
- M-117 **A. F. Molisch**, Antenna selection in MIMO systems, FTW Telekommunikationsforum, 18. June, 2010.
- M-116 J. Salmi, S. Sangodoyin, and **A. F. Molisch**, “High Resolution Parameter Estimation for Ultra-Wideband MIMO Radar”, COST 2100 meeting, Bologna, Italy, Nov. 2010.
- M-115 **A. F. Molisch**, “Wireless Technology for Healthcare”, Caltech, Pasadena, CA, USA, Nov. 12th, 2010.
- M-114 M. Zhu, F. Tufvesson, S. Wyne, G. Eriksson, and **A. F. Molisch**, “Parameterization of 300 MHz MIMO Measurements in Suburban Environments for the COST 2100 MIMO Channel Model”, TD(10)11071, 2010.
- M-113 **A. F. Molisch**, “Ultrawideband (UWB) communications and ranging for sensor networks”, IEEE Distinguished Lecture Series, HongKong University, April 13 2010.
- M-112 **A. F. Molisch**, “Cooperation techniques in ad-hoc and infrastructure-based wireless networks”, Keynote at 2010 International Conference on Communications and Mobile Computing (CMC 2010).

- M-111 J. Salmi, J. Poutanen, K. Haneda, A. Richter, V.-M. Kolmonen, P. Vainikainen, and **A. F. Molisch**, “Incorporating Diffuse Scattering in Geometry-based Stochastic MIMO Channel Models”, *COST 2100 TD(10)10047*, 2010.
- M-110 **A. F. Molisch**, “Spatial channels and MIMO systems”, lecture series at Beihang University, Beijing, China, January 4-6, 2010.

2009

- M-109 **A. F. Molisch**, “Ultrawideband radio for short-range communications and localization”, Invited lecture at the Inauguration of the Center for Short-Range Radio, University of Twente, Netherlands, December 17th, 2009.
- M-108 **A. F. Molisch**, “Base Station Cooperation”, lecture at opening of Christian Doppler laboratory, Vienna, Austria, October 13th, 2009
- M-107 **A. F. Molisch**, “Cross-layer optimization of wireless collaborative ad-hoc networks”, lecture at Communications Colloquium, Vienna, Austria, October 13th, 2009.
- M-106 G. Caire, **A. F. Molisch**, E. Rebeiz, and S. Sreekanta, “Cognitive Medical Environment”, Body Computing Conference, Los Angeles, CA, September 8th, 2009.
- M-105 **A. F. Molisch**, “Multi-user MIMO and Base Station cooperation”, invited keynote at Wireless Personal Multimedia Communications Symposium (WPMC), Sendai, Japan, September 8th, 2009.
- M-104 G. Caire, G. Kramer, and **A. F. Molisch**, “Relaying and cooperation – recent results and suggestions for future work”, Lecture at Intel Research, San Jose, CA, May 13th, 2009.
- M-103 **A. F. Molisch**, “Cross-layer optimization of wireless collaborative ad-hoc networks”, Lecture at Jiaotong University, Shanghai, China, May 2009.
- M-102 **A. F. Molisch**, “Cross-layer optimization of wireless collaborative ad-hoc networks”, Lecture at Zhejiang University, Hangzhou, China, May 2009.
- M-101 **A. F. Molisch**, “Distributed MIMO Systems and Base Station Cooperation”, Lecture at Beihang University and Beijing IEEE ComSoc Chapter, Beijing, China, May 2009.
- M-100 **A. F. Molisch**, “Sensor Networks for energy-saving applications: physical-layer and cross-layer aspects”, Lecture at Tsinghua University, Beijing, China, May 21st, 2009.
- M-99 X. Shen, **A. F. Molisch**, Z. Niu, and H. Zhang, “Selected papers from Chinacom'06”, *Springer Wireless Networks*, 15, 419-421 (2009).

2008

- M-98 **A. F. Molisch**, “UWB for sensor networks”, IEEE Distinguished Lecture, Singapore, Nov. 27th 2008.
- M-97 **A. F. Molisch**, “Cross - Layer Optimization of Wireless Collaborative Ad - hoc Networks”, IEEE Distinguished Lecture, Ho-Chi-Minh City, Vietnam, November 21st 2008.
- M-96 C. F. Mecklenbraeuer, A. Paier, T. Zemen, G. Matz, and **A. F. Molisch**, „On the Temporal Evolution of Signal Subspaces in Vehicular MIMO Channels in the 5 GHz Band”, *COST 2100 TD(08)631*, 2008.
- M-95 A. Paier, J. Karedal, T. Zemen, N. Czink, C. Dumard, F. Tufvesson, C. Mecklenbraeuer, and **A. F. Molisch**, “Description of Vehicle-to-Vehicle and Vehicle-to-Infrastructure Radio Channel Measurements at 5.2GHz”, *COST 2100 TD(08)636*, 2008.
- M-94 F. Harryson, J. Medbo, and **A. F. Molisch**, “Indoor Performance of a MIMO Terminal Including User Innuence by Comparing a Composite Channel Method with Direct Measurements”, *COST 2100 TD(08)661*, 2008.

- M-93 **A. F. Molisch**, “UWB for sensor networks “,Lecture at Beijing University of Post and Telecomm, Beijing, China, May 27th, 2008.
- M-92 **A. F. Molisch**, “Cross - Layer Optimization of Wireless Collaborative Ad - hoc Networks”, IEEE Distinguished Lecture, Beiha University,Beijing, China, May 23rd, 2008.
- M-91 **A. F. Molisch**, “Cross - Layer Optimization of Wireless Collaborative Ad - hoc Networks”, Lecture at Boston University, Boston, MA, USA, April 25th, 2008.
- M-90 **A. F. Molisch**, “Cross-layer Design in Collaborative Wireless Ad-hoc Networks”, IEEE Distinguished Lecture, Ames, IA, USA, March 24th 2008.
- M-89 **A. F. Molisch**, “UWB for sensor networks “, IEEE Distinguished Lecture, Rochester, MN, USA, March 24th 2008.
- M-88 J. Karedal, F. Tufvesson, **A. F. Molisch**, N. Czink, A. Paier, C. F. Mecklenbraeuer, C. Dumard and T. Zemen, “Geometry-Based Stochastic Channel Modeling of a Vehicle-to-Vehicle Radio Channel”, COST 2100 TD(08) 473, 2007.
- M-87 A. Richter, F. Tufvesson, P. Salvo Rossi, K. Haneda, J. Koivunen, V.-M. Kolmonen, J. Salmi, P. Almers, P. Hammarberg, K. P’ol’onen, P. Suvikunnas, **A. F. Molisch**, O. Edfors, V. Koivunen, P. Vainikainen, and R. R. Mueller, “Wireless LANs with High Throughput in Interference-Limited Environments – Project Summary and Outcomes”, COST 2100 TD(08) 432, 2008.

2007

- M-86 **A. F. Molisch**, „MIMO antennas, propagation channels, and their impact on system design”, keynote at IEEE ISWCS, Trondheim, Norway, Oct. 18th 2007.
- M-85 C. F. Mecklenbräuer, A. Paier, J. Karedal, N. Czink, H.Hofstetter, C. Dumard, T. Zemen, F. Tufvesson, **A. F. Molisch**, „Challenges in vehicular communications for impactive systems - Dynamics, Doppler, and Delay“, JWCC 2007, Oct. 16th 2007.
- M-84 **A. F. Molisch**, „Cooperative communications for ultrareliable wireless systems“, invited talk at Chinacom 2007, August 22nd, 2007
- M-83 **A. F. Molisch**, “UWB channels and their interaction with system design”, lecture at Shanghai Jiatong University, Shanghai, China, August 21st, 2007.
- M-82 A. F. Molisch, “Antenna Selection and RF Processing for MIMO Systems”, lecture at Shanghai Jiatong University, Shanghai, China, August 21st, 2007.
- M-81 **A. F. Molisch**, „Low-data-rate UWB communications – the theory of making it practical“, *IEEE Communication Theory Workshop 2007*
- M-80 N. Devroye, N. B. Mehta, and **A. F. Molisch**, „Asymmetric Cooperation Among Relays with Linear Precoding“, *IEEE Communication Theory Workshop 2007*.

2006

- M-79 **A. F. Molisch**, “Cross-layer Design in Collaborative Wireless Ad-hoc Networks”, lecture at University of Connecticut, Storrs, CT, Nov. 3rd, 2006.
- M-78 **A. F. Molisch**, “Antenna Selection and RF Processing for MIMO Systems”, lecture at Boston University, Boston, MA, Oct. 1st, 2006.
- M-77 **A. F. Molisch**, “UWB communication systems for sensor networks”, lecture at Yale University, New Haven, CT, Sept. 13th, 2006.
- M-76 **A. F. Molisch**, “UWB channels and their interaction with system design”, lecture at Tsinghua University, Beijing, June 23rd, 2006.

- M-75 **A. F. Molisch**, “Antenna Selection and RF Processing for MIMO Systems”, lecture at Tsinghua University, Beijing, June 23rd, 2006.
- M-74 **A. F. Molisch**, “UWB channels and their interaction with system design”, lecture at MIT, Boston, MA, April 20th, 2006.
- M-73 **A. F. Molisch**, “UWB for sensor networks – the 802.15.4a standard”, lecture at Center of Excellence for Embedded Wireless Systems, University of L’Aquila, Italy, March 30th 2006.
- M-72 **A. F. Molisch**, “UWB for sensor networks – the 802.15.4a standard”, keynote lecture at the UBC-IEEE Workshop on Future Wireless Systems, Vancouver, March 10th 2006.
- M-71 **A. F. Molisch**, “Antenna Selection and RF Processing for MIMO Systems”, lecture at University of Toronto, Feb. 03rd 2006.
- M-70 **A. F. Molisch**, “UWB for sensor networks – the IEEE 802.15.4a standard”, lecture at University of Waterloo, Feb. 02nd 2006.

2005

- M-69 **A. F. Molisch**, “Antenna Selection and RF Processing for MIMO Systems”, lecture at Technical University Vienna, Dec. 22nd 2005.
- M-68 **A. F. Molisch**, “Antenna Selection and RF Processing for MIMO Systems”, lecture at University of Southern California, Nov. 9th 2005.

2004

- M-67 B. K. Lau, J. B. Andersen, G. Kristensen, and **A. F. Molisch**, “On impedance matching and bandwidth of compact antenna arrays”, COST 273, TD 05(097), Lisbon, 2005.
- M-66 S. Wyne, P. Almers, B. K. Lau, G Eriksson, J. Karedal, F. Tufvesson, and **A. F. Molisch**, “Why the channel matrix in a LOS scenario has zero mean entries”, COST 273, TD 04 (192), 2004.
- M-65 **A. F. Molisch**, „Ultrawideband systems,“ lecture at TU Vienna, Dec. 22nd, 2004.
- M-64 **A. F. Molisch** and F. Tufvesson, Ultra-Wideband Communications using Hybrid Matched Filter Correlation Receivers , COST 273 TD 04-092.
- M-63 J. S. Yedidia, K. Pedagani, and **A. F. Molisch**, “New Spreading Transforms for Fading Channels”, Allerton conference, Sept. 2004.
- M-62 **A. F. Molisch**, Ultrawideband systems, lecture at Ericsson Mobile Platforms, Lund, Sweden, June 18th, 2004.
- M-61 **A. F. Molisch**, Ultrawideband systems, lecture at FOI, Linkoping, Sweden, June 16th, 2004.
- M-60 S. Wyne, P. Almers, G Eriksson, J. Karedal, F. Tufvesson, A. Wern, B. Manderson, and **A. F. Molisch**, “Outdoor to Indoor Office MIMO Measurements at 5.2 GHz”, COST 273, TD 04 (152), 2004.
- M-59 **A. F. Molisch**, UWB channel measurement and modeling, full-day lecture at Oulu University, June 14th, 2004.
- M-58 **A. F. Molisch**, “MIMO propagation channels: physics and interaction with communication theory“, Communication Theory Workshop, June 2004, Capri, Italy.

2003

- M-57 **A. F. Molisch**, “Recent results in MIMO channel measurement and modeling”, invited talk at MIT, Dec.. 10th 2003.

- M-56 **A. F. Molisch**, “The keyhole effect: theory and measurements”, invited talk at Stanford University, Dec.. 5th 2003.
- M-55 **A.F. Molisch**, “Recent results in MIMO channel measurement and modeling”, invited talk at Harvard University, Oct. 10th 2003.
- M-54 P. Almers, F. Tufvesson, and **A. F. Molisch**, “On keyholes”, Communication Theory Workshop, Phoenix, Arizona, April 8th, 2003.

2002

- M-53 **A. F. Molisch**, “UWB Propagation channels”, lecture at the KETI seminar on UWB technology, Seoul, Korea, Dec. 19th, 2002.
- M-52 **A. F. Molisch**, “Ultrawideband channels”, KETI Seminar on UWB Past Present and Future, Seoul, Korea, Dec. 16th 2002.
- M-51 **A.F. Molisch**, “Double-directional channels and MIMO systems”, lecture at Ericsson Mobile Phone Platforms, Nov. 29th 2002.
- M-50 **A. F. Molisch**, “Directional channels: new challenges for measurement and modeling”, contribution for panel on smart antennas and MIMO at WPMC 2002, Oct. 28th, 2002.
- M-49 **A. F. Molisch**, “A Generic Model for MIMO wireless propagation channels”, COST273 TD 02-100, 2002.
- M-48 **A.F. Molisch**, “MIMO systems and double-directional channels”, lecture at KTH Stockholm, Oct. 14th 2002.
- M-47 **A.F. Molisch**, “MIMO systems and double-directional channels”, lecture at Ericsson Radio Systems, Stockholm,, Oct. 13th 2002.
- M-46 **A.F. Molisch**, “Double-directional channels and MIMO systems”, lecture at University of Minnesota at Minneapolis, April 25th 2002.
- M-45 **A.F. Molisch**, “Double-directional channels and MIMO systems”, lecture at L3 communications, Salt Lake City, Utah March 5th 2002.
- M-44 **A.F. Molisch**, “Double-directional channels and MIMO systems”, lecture at NorthWestern University, Feb.. 14th 2002.
- M-43 **A.F. Molisch** and H. Asplund, “The COST259 directional channel model”, tutorial to the 3GPP ad-hoc group on MIMO channel modeling, January 2002.

2001

- M-42 **A. F. Molisch**, “Spatial channels and MIMO systems”, lecture at the Lund/Ronneby seminar on smart antennas, Nov. 20 2001.
- M-41 **A.F. Molisch** “The COST259 directional channel model”, lecture at Lucent BellLabs, May 30, 2001.
- M-40 **A. F. Molisch**, “Spatial channels and MIMO systems”, lecture at University of Erlangen-Nuernberg, Feb. 28 2001.

2000

- M-39 **A. F. Molisch** “Spatial channel measurement and modelling”, lecture at Ericsson Research, Stockholm, Dec. 19. 2000.
- M-38 **A. F. Molisch**, “Some aspects of MIMO systems”, lecture at AT&T Labs Research, Red Bank, Sept. 15 2000.

- M-37 **A. F. Molisch** "Spatial channel measurement and modelling", lecture at Bell Labs, Holmdel, Sept. 13. 2000.
- M-36 M. Steinbauer, J. E. Dietert, T. Engler, R. Heddergott, R. Kattenbach, J. Medbo, and **A. F. Molisch**, "Modeling Unification Workshop II (on Micro and pico cells)", COST 259 TD00(35) (2000).
- M-35 **A. F. Molisch** "Spatial channel measurement and modelling", lecture at AT&T Labs - Research, Red Bank, Aug. 23. 2000.
- M-34 **A. F. Molisch**, "Messung und Modellierung räumlicher Mobilfunkkanäle", lecture at the Universität Saarbrücken, June 9. 2000.
- M-33 **A. F. Molisch**, "Intelligente Antennen und räumliche Kanalmodelle", Vortrag an der Technischen Universität Graz, May 15 2000 (2000).

1999

- M-32 **A. F. Molisch** "Spatial channel measurement and modelling", lecture at the Royal Institute of Techn., Stockholm, Sweden, Nov. 17 1999
- M-31 **A. F. Molisch**, "Wireless wideband receivers without equalizers", lecture at the Royal Institute of Techn., Stockholm, Sweden, Nov. 16. 1999
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STANDARDS SUBMISSIONS TO 3GPP

Some 15 contributions to 3GPP; however, this standards organization only lists companies, not specific authors. Therefore my contributions are not listed here.

INDUSTRIAL RESEARCH REPORTS

I have authored a total of more than 30 research reports for companies, both internally for MERL, AT&T, and FTW, as well as reports for industrial partners. Titles of those reports are confidential.