
ANDREAS F. MOLISCH
List of Publications

Research publications

Publications authored, co-authored, or edited

- *books*, p. 2
- *book chapters*, p. 4
- *journal papers*
 - international journals p. 7
 - national journals p. 34
- *reviewed conference papers*
 - international conferences p. 35
 - national/continental conferences p. 64
- *tutorials* p. 70
- *other contributions* (keynotes, invited talks, etc.) p. 74

Patents

- *patents* p. 91

Industrial contributions

- *standardization contributions* p. 97
- *research reports* p. 102

Citation Statistics

h-index: 106 (Google Scholar)

Number of citations: 64,000 (Google Scholar): see also

<https://scholar.google.com/citations?user=W0wwrucAAAAJ&hl=en&oi=ao>

BOOKS**2022/2011/2005**

- B-5 **A. F. Molisch**, “Wireless Communications”,
First edition: 668 pages, IEEE Press – Wiley (2005);
translation into Chinese, PHEI.
Second edition: 888 pages, IEEE Press – Wiley (2011);
translation into Chinese: Electronic Industry Press.
Third edition, “Wireless Communications - From fundamentals to Beyond 5G” (1005 pages),
IEEE Press-Wiley (2022).

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, MIMO), multi-user systems (scheduling, cognitive radio) and a description of standardized systems. A second edition appeared in early 2011, a third, expanded and completely revised edition in 2022 (copyright year 2023).

2022

- B-4 T. S. Rappaport, K. A. Remley, C. Gentile, **A. F. Molisch**, and A. Zajic (eds.), “Radio Propagation Measurements and Channel Modeling - Best Practices for Millimeter-Wave and Sub-Terahertz Frequencies, Cambridge University Press (2022).

This edited book provides a detailed description of measurement and modeling techniques for millimeter-wave and sub-THz frequencies. It is the output of the NIST mm-wave channel modeling group, where I co-chaired the channel modeling group.

2006

- B-3 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.

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**2022**

BC-22 M. C. Lee, M. Ji, and **A. F. Molisch**, “Scaling Laws for Cache-Aided Device-to-Device Networks for Wireless Video”, in H. V. Poor and W. Chen, *Edge Caching for Mobile Networks*, Cambridge University Press (2022).

2021

BC-21 **A. F. Molisch**, T. Choi, N. Abbasi, F. Rottenberg, and J. Zhang “Millimeter-wave channels”, in Wiley 5G Encyclopedia, pages 1-46, doi = <https://doi.org/10.1002/9781119471509.w5GRef042>, url = <https://onlinelibrary.wiley.com/doi/abs/10.1002/9781119471509.w5GRef042>,

2019

BC-20 C. Huang, R. He, **A. F. Molisch**, Z. Zhong, and, and B. Ai, “Machine Learning Enabled Channel Modeling”, in R. He and Z. Ding (eds.), “Applications of Machine Learning in Wireless Communications”, IET Press (2019).

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**2023**

- J-296 Y. Cai, J. Llorca, A. Tulino, and **A. F. Molisch**, “Decentralized Control of Distributed Cloud Networks with Generalized Network Flows”, *IEEE Trans. Comm* **71**, 256-268 (2023).
- J-295 F. Sheikh, A. Prokscha, J. M. Eckhardt, T. Doeker, N. A. Abbasi, J. Gomez-Ponce, B. Sievert, J. T. Svejda, A. Rennings, J. Barowski, C. Schulz, I. Rolfes, D. Erni, **A. F. Molisch**, T. Kurner, and T. Kaiser, “THz Measurements, Antennas, and Simulations: From the Past to the Future”, *IEEE J. of Microwaves* **3**, 289-304 (2023).
- J-294 X. Su, H. Song, H. Zhou, K. Zou, Y. Duan, N. Karapetyan, R. Zhang, A. Minoofar, H. Song, K. Pang, S. Zach, **A. F. Molisch**, M. Tur, and A. E. Willner, “A THz Integrated Circuit based on a Pixel Array to Mode Multiplex Two 10-Gbit/s QPSK Channels Each on a Different OAM Beam”, *IEEE J. Lightwave Techn.*, **41**, 1095-1103 (2023).
- J-293 M. C. Lee and **A. F. Molisch**, “Optimal Delay-Outage Analysis for Noise-Limited Wireless Networks with Caching, Computing, and Communications”, *IEEE Trans. Wireless Comm.* **22**, 1417-1431 (2023).
- J-292 N. Abbasi, J. Gomez, R. Kondaveti, S. Shaikbepari, S. Rao, S. Abu-Surra, G. Xu, J. C. Zhang, and **A. F. Molisch**, “THz Band Channel Measurements and Statistical Modeling for Urban D2D Environments”, *IEEE Trans. Wireless Comm.*, **22**, 1466-1479 (2023).

2022

- J-291 M. Ito, I. Kanno, K. Yamazaki, Y. Kishi, W. Y. Chen, T. Choi, and **A. F. Molisch**, “Impact of Antenna Distribution on Spectral and Energy Efficiency of Cell-Free Massive MIMO with Transmit Power Control Algorithms”, *IEEE Open Journal Comm.* **3**, 1615-1629 (2022).
- J-290 A. E. Willner, X. Su, H. Zhou, A. Minoofar, Z. Zhao, R. Zhang, M. Tur, **A. F. Molisch**, H. Sasaki, A. Almainan, and, “High capacity terahertz communication systems based on multiple orbital-angular-momentum beams”, *Journal of Optics* **12**, 124002 (2022).
- J-289 X. Su, R. Zhang, Z. Zhao, H. Song, A. Minoofar, N. Hu, H. Zhou, K. Zou, K. Pang, H. Song, B. Lynn, S. Zach, M. Tur, **A. F. Molisch**, H. Sasaki, D. Lee, and A. E. Willner, “Receiver Aperture and Multipath Effects on Power Loss and Modal Crosstalk in a THz Wireless Link using Orbital-Angular-Momentum Multiplexing”, *Scientific Reports* **12**, Article 14053 (2022).
- J-288 V. Ratnam, J. Mo, A. Alammouri, B. L. Ng, S. Abu-Surra, G. Xu, C. Zhang, and **A. F. Molisch**, “Joint phase-time arrays: a paradigm for frequency-dependent analog beamforming in 6G”, *IEEE Access* **10**, 73364-73377 (2022).

- J-287 H. Zhou, X. Su, A. Minoofar, R. Zhou, H. Song, K. Pang, h. Qian, H. Hu, Z. Zhao, A. Almainan, S. Zach, M. Tur, **A. F. Molisch**, H. Sasaki, D. Lee, A. E. Willner, “Utilizing Multiplexing of Structured THz Beams Carrying Orbital-Angular-Momentum for High-Capacity Communications”, *Optics Express* **30**, 25418-25432 (2022).
- J-286 C. Huang, R. Wang, C. X. Wang, T. Pan, and **A. F. Molisch**, “A Geometry-Based Stochastic Model for Truck Communication Channels in Freeway Scenarios”, *IEEE Trans. Comm.*, **70**, 5572-5586 (2022).
- J-285 C. Han, Y. Wang, Y. Li, Y. Chen, N. Abbasi, T. Kürner, and **A. F. Molisch**, “Terahertz Wireless Channels: A Holistic Survey on Measurement, Modeling, and Analysis”, *IEEE Communications Surveys and Tutorials* **24**, 1670-1707 (2022).
- J-284 J. Gomez, N. Abbasi, A. E. Willner, J. Zhang, and **A. F. Molisch**, “Directionally Resolved Measurement and Modeling of THz Band Propagation Channels (invited paper)”, *IEEE Open J. Antennas and Propagation* **3**, 663-686 (2022).
- J-283 Y. Cai, J. Llorca, A. Tulino, and **A. F. Molisch**, “Ultra-Reliable Distributed Cloud Network Control with End-to-End Latency Constraints”, *IEEE/ACM Trans. Networking*, **30**, 2505-2520 (2022).
- J-282 D. Burghal, R. Wang, A. Alghafis, and **A. F. Molisch**, “Supervised ML Solution for Band Assignment in Dual-Band Systems with Omni and Directional Antennas”, *IEEE Trans. Wireless Comm.*, **21**, 7550-7565 (2022).
- J-281 S. Jiang, W. Wang, Y. Miao, W. Fan, and **A. F. Molisch**, “A Survey of Dense Multipath and Its Impact on Wireless Systems”, *IEEE Open Journal of Antennas and Propagation*, **3**, 435-460 (2022).
- J-280 J. Gomez, N. A. Abbasi, R. Kondaveti, A. Kumar, S. Abu-Surra, G. Xu, C. Zhang, and **A. F. Molisch**, “Impact of common reflecting and absorbing building materials on THz multipath channels”, *Radio Science* **57**, 1-16 (2022).
- J-279 A. Minoofar, X. Su, H. Zhou, F. Alishahi, K. Zou, H. Song, R. Zhang, K. Pang, S. Zach, M. Tur, **A. F. Molisch**, H. Sasaki, D. Lee, and A. E. Willner, “Experimental Demonstration of sub-THz Wireless Communications Using Multiplexing of Laguerre-Gaussian Beams When Varying Two Different Modal Indices”, *IEEE J. Lightwave Techn.* **40**, 3285-3292 (2022).
- J-278 M.C. Lee, M. Ji, and **A. F. Molisch**, “Throughput-Outage Scaling Behaviors for Wireless Single-Hop D2D Caching Networks with Physical Model”, *IEEE Trans. Wireless Comm.* **21**, 6523-6538 (2022).
- J-277 C. Huang, R. He, B. Ai, **A. F. Molisch**, B. K. Lau, K. Haneda, B. Liu, C. X. Wang, M. Yang, C. Oestges, and Z. Zhong, “Artificial Intelligence Enabled Radio Propagation for Communications— Part II: Scenario Identification and Channel Modeling”, *IEEE Trans.*

Antennas Prop., **70**, 3955-3969 (2022).

- J-276 C. Huang, R. He, B. Ai, **A. F. Molisch**, B. K. Lau, K. Haneda, B. Liu, C. X. Wang, M. Yang, C. Oestges, and Z. Zhong, “Artificial Intelligence Enabled Radio Propagation for Communications—Part I: Channel Characterization and Antenna-Channel Optimization”, *IEEE Trans. Antennas Prop.*, **70**, 3939-3954 (2022).
- J-275 W. J. Yun, D. Kwon, M. Choi, J. Kim, G. Caire, and **A. F. Molisch**, “Quality-Aware Deep Reinforcement Learning for Streaming in Infrastructure-Assisted Connected Vehicles”, *IEEE Trans. Vehicular Techn.*, **71**, 2002-2017 (2022).
- J-274 P. Koivumaki, **A. F. Molisch**, and K. Haneda, “Line-of-Sight Probability in Cluttered Urban Microcells: Analyses Using Poisson Point Process and Point Cloud”, *IEEE Trans. Antennas Prop.* **70**, 2161-2173 (2022).

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- J-273 H. Song, X. Su, H. Song, R. Zhang, Z. Zhao, N. Hu, K. Zou, H. Zhou, K. Pang, C. Liu, K. Manukyan, A. Almainan, **A. F. Molisch**, R. W. Boyd, S. Zach, M. Tur, and A. E. Willner, “Simultaneous turbulence mitigation and channel demultiplexing using a single multi-plane light convertor for a free-space optical link with two 100-Gbit/s OAM channels”, *Optics Communications*, 501, p.127359 (2021).
- J-272 T. Choi, M. Ito, I. Kanno, J. Gomez, C. Bullard, T. Ohseki, K. Yamazaki, and **A. F. Molisch**, “Energy Efficiency of Uplink Cell-Free Massive MIMO With Transmit Power Control in Measured Propagation Channel”, *IEEE Open Journal of Circuits and Systems*, **2**, 792-804 (2021).
- J-271 A. E. Willner, Z. Zhao, C. Liu, R. Zhang, H. Song, K. Pang, K. Manukyan, H. Song, X. Su, G. Xie, Y. Ren, Y. Yan, M. Tur, **A. F. Molisch**, R. W. Boyd, H. Zhou, N. Hu, A. Minoofar, and H. Huang, “Perspectives on advances in high-capacity, free-space communications using multiplexing of orbital-angular-momentum beams”, *APL Photon.* **6**, 030901 (2021); cover of APL Photonics March 2021 issue.
- J-270 H. Tataria, M. Shafi, **A. F. Molisch**, M. Dohler, H. Sjöland, and F. Tufvesson, “6G Wireless Systems: Vision, Requirements, Challenges, Insights, and Opportunities”, *Proc. IEEE*, **109**, 1166-1199 (2021).
- J-269 Z. Zhao, R. Zhang, H. So1, K. Pang, A. Almainan, H. Zhou, H. Song, C. Liu, N. Hu, X. Su, A. Minoofar, H. Sasaki, D. Lee, M. Tur, **A. F. Molisch** and A. E. Willner “Modal Coupling and Crosstalk due to Turbulence and Divergence on Free Space THz Links Using Multiple Orbital Angular Momentum Beams”, *Scientific Reports*, 11:2110 (2021).
- J-268 M. C. Lee, M. Ji, and **A. F. Molisch**, “Optimal Throughput-Outage Analysis of Cache-Aided Wireless Multi-Hop D2D Networks”, *IEEE Trans. Comm.*, **69**, 2489-2504 (2021).

- J-267 M. Choi, **A. F. Molisch**, D. J. Han, D. Kim, J. Kim, and J. Moon, “Probabilistic Caching and Dynamic Delivery Policies for Categorized Contents and Consecutive User Demands”, *IEEE Trans. Wireless Comm.*, **20**, 2685-2699 (2021).
- J-266 K. Pang, H. Song, Z. Zhao, R. Zhang, H. Song, G. Xie, L. Li, C. Liu, J. Du, **A. F. Molisch**, M. Tur, and A. E. Willner, “Experimental mitigation of the effects of the limited-size aperture or misalignment by transmitting each of four data channels on multiple Laguerre-Gaussian modes in a 400-Gbit/s free-space link”, *Optics Letters*, **45**, 6310-6313 (2021).
- J-265 K. C. Chen, S. C. Lin, J. H. Hsiao, C. H. Liu, **A. F. Molisch**, and G. Fettweis, “Wireless Networked Multi-Robot Systems in Smart Factories”, *Proc. IEEE*, **109**, 468-494 (2021).
- J-264 C. Huang, R. Wang, P. Tang, R. He, B. Ai, Z. Zhong, and **A. F. Molisch**, “Geometry-Cluster-Based Stochastic MIMO Model for Vehicle-to-Vehicle Communications in Street Canyon Scenarios”, *IEEE Trans Wireless Comm.*, **20**, 755-770 (2021).
- J-263 T. Choi, F. Rottenberg, J. Gomez Ponce, R. Akshay, P. Luo, J. C. Zhang, and **A. F. Molisch**, “Experimental Investigation of Frequency Domain Channel Extrapolation in Massive MIMO Systems for Zero-Feedback FDD”, *IEEE Trans Wireless Comm.*, **20**, 710-725 (2021).
- J-262 H. Tataria, K. Haneda, **A. F. Molisch**, M. Shafi, and F. Tufvesson, “Standardization of Propagation Models for Terrestrial Cellular Systems –A Historical Perspective” (invited paper), *International Journal of Wireless Information Networks*, **28** (1), 20-44 (2021).

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- J-261 M. Banagar, H. Dhillon, and **A. F. Molisch**, “Impact of UAV Wobbling on the Air-to-Ground Wireless Channel”, *IEEE Trans. Vehicular Techn.*, **69**, 14025-14030 (2020).
- J-260 M. Choi, **A. F. Molisch**, and K. Kim, “Joint Distributed Link Scheduling and Power Allocation for Content Delivery in Wireless Caching Networks”, *IEEE Trans Wireless Comm.*, **19**, 7810-7824 (2020).
- J-259 C. Gentile, **A. F. Molisch**, J. Chuang, D. G. Michelson, A. Bodi, A. Bhardwaj, Oz. Ozdemir, W. A. G. Khawaja, I. Guvenc, Z. Cheng, F. Rottenberg, T. Choi, R. Müller, N. Han, D. Dupleich, “Methodology for Benchmarking Radio-Frequency Channel Sounders through a System Model”, *IEEE Trans. Wireless Comm.*, **19**, 6504-6519 (2020).
- J-258 B. Ai, **A. F. Molisch**, R. Rupp, Z. D. Zhong, “5G Key Technologies for Smart Railways”, *Proc. IEEE*, **108**, 856-893 (2020).
- J-257 S. Han, X. Tan, K. Qi, C. Yang, **A. F. Molisch**, Y. Lu, J. Zheng, Y. Li, “Rethinking the Gain of Multicasting and Proactive Caching for VoD Service”, *IEEE Wireless Communications Mag.*, **27**(5), 133-139 (2020).

- J-256 M. C. Lee and **A. F. Molisch**, “Individual Preference Aware Caching Policy Design in Wireless D2D Networks”, *IEEE Trans. Wireless Comm.*, **19**, 5589-5604 (2020).
- J-255 M. C. Lee, H. Feng, and **A. F. Molisch**, “Dynamic Caching Content Replacement in Base Station Assisted Wireless D2D Caching Networks”, *IEEE Access*, **8**, 33909-33925 (2020).
- J-254 R. Wang, C. U. Bas, Z. Chen, T. Choi, H. Feng, Z. Li, X. Ye, P. Tang, S. Sangodoyin, J. Gomez, R. Monroe, T. Henige, G. Xu, J. Zhang, J. Park, and **A. F. Molisch**, “Enabling Super-resolution Parameter Estimation for Mm-wave Channel Sounding”, *IEEE Trans. Wireless Comm.*, **19**, 3077-3090 (2020).
- J-253 C. Huang, **A. F. Molisch**, R. Wang, P. Tang, R. He, B. Ai, Z. Zhong, “Machine Learning-Enabled LOS/NLOS Identification for MIMO System in Dynamic Environment”, *IEEE Trans. Wireless Comm.*, **19**, 3643-3657 (2020).
- J-252 F. Rottenberg, T. Choi, P. Luo, J. Zhang, and **A.F. Molisch**, “Performance Analysis of Channel Extrapolation in FDD Massive MIMO Systems”, *IEEE Trans. Wireless Comm.* **19**, 2728-2741 (2020).
- J-251 C. Huang, **A. F. Molisch**, Y. Geng, R. He, B. Ai, Z. Zhong, “Trajectory-Joint Clustering Algorithm for Time-Varying Channel Modeling”, *IEEE Trans. Vehicular Techn.*, **69**, 1041-1045 (2020).
- J-250 S. Han, S. Hu, C. Y. Yang, and **A. F. Molisch**, “Proactive Edge Caching for Video on Demand with Quality Adaptation”, *IEEE Trans. Wireless Comm.*, **19**, 218-234 (2020).

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- J-249 L. Li, R. Zhou, P. Cheng, Y. Cao, H. Song, Y. F. Zhao, J. Du, Z. Zhao, C. Liu, K. Pang, H. Song, A. S. Almainan, D. Starobudov, B. Lynn, R. Bock, M. Tur, **A. F. Molisch**, and A. Willner “Mitigation for turbulence effects in a 40-Gbit/s orbital-angular-momentum-multiplexed free-space optical link between a ground station and a retro-reflecting UAV using MIMO equalization”, *Optics Letters*, **44**, 5181-5184 (2019).
- J-248 C. Huang, **A. F. Molisch**, R. He, R. Wang, P. Tang, Z. Zhong, “Machine-Learning-Based Data Processing Techniques for Vehicle-to-Vehicle Channel Modeling”, *IEEE Comm Mag.*, **57**, (11), 109-115 (2019).
- J-247 V. Ratnam and **A. F. Molisch**, “Continuous Analog Channel Estimation Aided Beamforming for Massive MIMO Systems”, *IEEE Trans. Wireless Comm.*, **12**, 5557-5570 (2019).
- J-246 M. C. Lee, M. Ji, **A. F. Molisch**, and N. Sastry, “Throughput-Outage Analysis and Evaluation of Cache-Aided D2D Networks with Measured Popularity Distributions”, *IEEE Trans. Wireless Comm.*, **18**, 5316-5332 (2019).

- J-245 K. Yang, **A. F. Molisch**, T. Ekman, T. Roste, and M. Berbineau, “A Round Earth Loss Model and Small-scale Channel Properties for Open-Sea Radio Propagation”. *IEEE Trans. Vehicular Techn.*, **68**, 8449-8460 (2019).
- J-244 R. Wang, O. Renaudin, U. Bas, S. Sangodoyin, and **A. F. Molisch**, “On channel sounding with switched arrays in fast time-varying channels”, *IEEE Trans. Wireless Comm.*, **18**, 3843-3855 (2019).
- J-243 C U. Bas, R. Wang, S. Sangodoyin, T. Henige, R. Monroe, J. Park, J. Zhang, **A. F. Molisch**, “Real-Time Millimeter-Wave MIMO Channel Sounder for Dynamic Directional Measurements”, *IEEE Trans. Vehicular Techn.*, **68**, 8775-8789 (2019).
- J-242 L. Zhou, F. Luan, S. Zhou, **A. F. Molisch**, and F. Tufvesson, “Geometry-based Stochastic Channel Model for High Speed Railway Communications”, *IEEE Trans. Vehicular Techn.*, **68**, 4353 - 4366 (2019).
- J-241 M. C. Lee, **A. F. Molisch**, N. Sastry, and A. Raman, “Individual Preference Probability Modeling and Parameterization for Video Content in Wireless Caching Networks”, *IEEE/ACM Trans. Networking*, **27**, 676-690 (2019).
- J-240 V. Ratnam and **A. F. Molisch**, “Periodic Analog Channel Estimation Aided Beamforming for Massive MIMO Systems”, *IEEE Trans. Wireless Comm.*, **18**, 1581-1594 (2019).
- J-239 E. Zochmann, M. Hofer, M. Lerch, S. Pratschner, L. Bernado, R. Blumenstein, S. Caban, S. Sangodoyin, H. Groll, T. Zemen, A. Prokesch, M. Rupp, **A. F. Molisch**, and C. F. Mecklenbrauker, “Position-Specific Statistics of 60 GHz Vehicular Channels During Overtaking”, *IEEE Access*, **7**, 14216-14232 (2019).
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- J-237 Z. Jiang, S. Zhou, S. Chen, **A. F. Molisch**, R. Vannithamby, and Z. Niu, “Exploiting Wireless Channel State Information Structures Beyond Linear Correlations: A Deep Learning Approach March 2019/Applications of Artificial Intelligence in Wireless Communications”, *IEEE Communications Mag.*, **57** (3), 28-34 (2019).
- J-236 S. Aditya, H. Dhillon, **A. F. Molisch**, M. J. Buehrer, and H. Behairy, “Characterizing the Impact of SNR Heterogeneity on Time-of-Arrival based Localization Outage Probability”, *IEEE Trans. Wireless Comm.*, **18**, 637-649 (2019).
- J-235 U. Bas, V. Kristem, R. Wang, and **A. F. Molisch**, “Real-time Ultra-Wideband Channel Sounder Design for 3-18 GHz”, *IEEE Trans. Comm.*, **67**, 2995-3008 (2019).
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- T-33 **A. F. Molisch**, D. Burghal, and L. Chu, “Scalable, Accurate, and Privacy-Preserving Localization in B5G Wireless Networks”, tutorial at Globecom 2022, Rio de Janeiro

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Half-day tutorial at MILCOM, San Diego
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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

OTHER CONTRIBUTIONS**Keynotes, invited talks, panel presentations, unreviewed papers,.....****2022**

M-214 **A. F. Molisch**, Propagation channels for 6G and why they matter for signal processing”, *Keynote at IEEE SPAWC*, July 5, 2022.

2021

M-213 **A. F. Molisch**, “Sub-THz Channels and Communications Systems for 6G”, invited talk at BUPT, Dec. 13, 2021.

M-212 **A. F. Molisch**, “Sub-THz Channels and Communications Systems for 6G”, **keynote** at IEEE Globecom 2021, Dec. 9, 2021

M-211 **A. F. Molisch**, “Measurement and modeling of wireless propagation channels between vehicles”, **keynote** at 13th ISAPE, Dec. 3, 2021.

M-210 **A. F. Molisch**, “Recent results in outdoor mm-wave and THz channels”, invited lecture at SouthEast University, Nanjing, China, August 12, 2021.

M-209 **A. F. Molisch**, “Terahertz Communications systems”, invited talk at IWPC workshop “Exploring the 6G Vision and Key Enablers”, July 15th, 2021.

M-208 **A. F. Molisch**, “Evolution to 6G”, contribution to The future of wireless *Panel Discussion* of APSIPA, May 29th 2021.

M-207 **A. F. Molisch**, “Terahertz propagation channels and communications systems - a key component of B5G”, *IEEE Distinguished Lecture – VTS Australia/New Zealand Chapter*, April 20, 2021.

M-206 **A. F. Molisch**, “Joint radar and communications in existing standards”, Contribution to Panel Discussion on Integration Of Radar Sensing And Communications WCNC 21, March 30th 2021.

M-205 **A. F. Molisch**, Measurement and Modeling of Millimeterwave and Terahertz Channel, ICOIN 2021.

M-204 M. Hofer, D. Loeschenbrand_, J. Blumensteiny, H. Groll, S. Zelenbaba, B. Rainer, L. Bernado, J. Vychodil, T. Mikulasek, E. Zochmann, S. Sangodoyin, H. Hammound, B. Schrenk_, A. Prokes, **A. F. Molisch**, C. F. Mecklenbrauker_, and T. Zemen, “Wireless Vehicular Multiband Measurements in Centimeterwave and Millimeterwave Bands”, *CA15104TD(21)14032* Online Meeting February 8 - 9, 2021.

2020

- M-203 **A. F. Molisch**, “The convergence of wireless communications with distributed computation and storage”, **keynote** at *Strategy Workshop for 2030 ICT Technology*, Dec. 2020.
- M-202 **A. F. Molisch**, “Sub-terahertz propagation channels and their impact on system design”, invited talk at *6G Industry Forum at Globecom 2020*.
- M-203 **A. F. Molisch**, “V2V Propagation Channels Below and Above 6 GHz,” invited talk at *KICS Workshop on 6G/Unmanned Vehicle Technology: Road Ahead*, Nov. 27th 2020, Korea.
- M-201 **A. F. Molisch**, “Mm-wave and THz channels and systems for high-mobility environments”, **Keynote** at *IEEE Vehicular Techn. Conf. 2020*
- M-200 **A. F. Molisch**, “ToA based localization in multi-path environments”, **Keynote** at *IEEE RFID 2020 Conf.*, Oct. 7th, 2020.
- M-199 **A. F. Molisch**, “Recent results in outdoor mm-wave and THz channels”, **keynote** at *IRACON meeting*, Sept. 14, 2020.
- M-198 **A. F. Molisch** “Network resilience in 5G”, *presentation at panel at ISART*, August 11th, 2020.
- M-197 **A. F. Molisch**, “New results in Terahertz and mmWave propagation channels”, **Keynote** at *IWMTS 2020*, July 3rd 2020.
- M-196 **A. F. Molisch**, “ToA based localization in the presence of blockage and multipath”, **Keynote** at *ICC 2020 Workshop on Advances in Network Localization and Navigation (ANLN)*, June 8th 2020.
- M-195 **A. F. Molisch**, “Channel measurements and modeling for 0.1-0.5 THz”, **Keynote** at *2020 WCNC Workshop on Emerging Terahertz Technology for Future Wireless Systems*, May 28th 2020.
- M-194 N. Abbasi, A. Hariharan, A. M. Nair, A. S. Almaiman, F. B. Rottenberg, A. E. Willner, A. F. Molisch, “Long-Distance Double Directional Channel Measurements for THz Communications”, *GOMACTech-20*, accepted poster. – conference cancelled

2019

- M-194 **A. F. Molisch**, “Recent results in wireless edge caching”, **Keynote** at *the Wireless Edge Intelligence Workshop, IEEE ICC*, Dec. 9th 2019.

- M-193 **A. F. Molisch**, “Caching-enabled Device-to-device Communications for Video Transmission”, *IEEE Distinguished Lecture Tour* at University of British Columbia, Canada, Oct. 18th, 2019.
- M-192 **A. F. Molisch**, “MM-wave propagation channels and their impact on 5G system design”, *IEEE Distinguished Lecture Tour* at University of Victoria, Canada, Oct. 17th, 2019.
- M-191 **A. F. Molisch**, “MM-wave propagation channels and their impact on 5G system design”, *IEEE Distinguished Lecture Tour* at Microsoft, Seattle, Oct. 16th, 2019.
- M-190 H. Groll, E. Zöchmann, M. Hofer, H. Hammoud, S. Sangodoyin, G. Ghiaasi, T. Zemen, J. Blumenstein, A. Prokes, **A. F. Molisch**, C. F. Mecklenbrauker, “60 GHz V2I channel variability for different elevation angle switching strategies”, CA15104 TD(19)11051, Gdansk, Sept. 2019.
- M-189 **A. F. Molisch**, “MM-wave propagation channels and their impact on 5G system design”, invited talk at National Chiao Tung University, Taiwan, May 16th 2019.
- M-188 **A. F. Molisch**, “Caching-enabled Device-to-device Communications for Video Transmission”, invited lecture at University of California at Irvine, April. 19th, 2019.
- M-187 J. Zhang, K. Yang, Y. Huang, M. Shafi, and **A. F. Molisch**, “Millimeter and THz wave for 5G and beyond”, *China Communications* editorial for special issue, **16** (2), iii-vi (2019).
- M-186 **A. F. Molisch**, “5G Wireless for IoT”, invited talk at IoT Workshop, University of Southern California, January 4th 2019.

2018

- M-185 J Zhang, M Shafi, AF Molisch, F Tufvesson, S Wu, K Kitao, “Channel Models and Measurements for 5G”, *Editorial for Feature Topic, IEEE Communications Magazine*, **56** (12), 12-13 (2018).
- M-184 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *keynote at IEEE Globasip*, November 28th, 2018.
- M-184 **A. F. Molisch**, “Machine learning for wireless propagation channels”, invited talk at *ITU Workshop on Machine Learning for telecommunications*”, August 2018.
- M-183 **A. F. Molisch**, “Measurement and modeling of THz propagation channels”, *keynote at “First International Workshop on Mobile Terahertz Systems (IWMTS)”*, 2018.
- M-182 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *Heinrich Hertz Institute, Berlin*, invited, June 27th, 2018

- M-181 **A. F. Molisch**, “Mm-wave channel measurements – recent results”, *Lund University*, invited, June 19th, 2018.
- M-180 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *IEEE Distinguished Lecturer Tour, Shenzhen*, May 17th, 2018
- M-179 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *Huawei STW*, May 16th, 2018
- M-178 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *IEEE Distinguished Lecturer Tour, Shanghai*, May 14th, 2018
- M-177 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *IEEE Distinguished Lecturer Tour, Beijing, (BUPT)*, May 10th, 2018
- M-176 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *IEEE Distinguished Lecturer Tour, Beijing (Tsinghua Univ.)*, May 10th, 2018
- M-175 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *IEEE Distinguished Lecturer Tour, Yokusuka*, May 8th, 2018
- M-174 **A. F. Molisch**, “New modulation and multiple access for 5G systems”, *IEEE Distinguished Lecturer Tour, Tokyo*, May 7th, 2018

2017

- M-173 **A. F. Molisch**, “Wireless communications in high-mobility environments”, *keynote IEEE Wireless Communications and signal processing conf. (WCSP)*, October 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 **A. F. Molisch**, “Channel Modeling for 5G mmW Systems,” *International Microwave Symposium 5G Summit*, invited talk, 2017
- M-168 **A. F. Molisch**, “On pathloss estimation and modeling in wireless communications”, invited talk, January 2017.

2016

- M-167 **A. F. Molisch**, Mm-wave channel measurements, Talk at 5G Silicon Valley summit, November 2016
- M-166 **A. F. Molisch**, Mm-wave channel measurements, Talk at 5G Silicon Valley summit, November 2016
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, Edinburg, 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 WWRF 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”, invited talk at 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?”, *keynote at IEEE ICC Workshop in Advances in Network Localization and Navigation*, June 14, 2014, Sydney, Australia).
- 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”, *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 Beihuan 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 Inuence 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, Beihuan 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. Mecklenbraeuker, 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. Mecklenbräuker, 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 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. 02^{nc} 2006.

2005

- M-69 **A. F. Molisch**, “Antenna Selection and RF Processing for MIMO Systems”, lecture at Technical University Vienna, Dec. 22^{nc} 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.

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STANDARDS SUBMISSIONS TO 3GPP

Some 25 contributions to 3GPP (3G, LTE, and 5G NR); however, this standards organization only lists companies, not specific authors. Therefore contributions are not listed here.

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