

Danping HE, Postdoctoral Researcher

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Education and Work Experience

06/2016-Present: **Postdoctoral Researcher**, State Key Lab of Rail Traffic and Control Safety, Beijing Jiaotong University, Beijing, China. Collaborating supervisor: Professor Bo Ai.

04/2014-05/2015: **Standard Engineer**, Huawei Technologies Co., Ltd., Beijing, China

10/2010-03/2014: **Ph.D. degree** in Industrial Electronics Engineering, Centro de Electrónica Industrial, Universidad Politécnica de Madrid, Spain (Professor Teresa Riesgo)

08/2012-11/2012: **Research visitor**, Institut national de recherche en informatique et en automatique (INRIA), France.

09/2008-07/2010: **Master (Erasmus Mundus scholarship)**, Information and Communication Technology

02.2010-07.2010: Universidad Politécnica de Madrid (UPM), Spain

09.2009-02.2010: Politecnico di Torino (PdT), Italy

09.2008-06.2009: Univ. Catholique de Louvain (UCL), Belgium

09/2004-07/2008: **Bachelor degree** in Electronic and Information Engineering, Huazhong University of Science and Technology, Wuhan, China

Scholarships

2008 European Union Erasmus Mundus scholarship

2012 National Scholarship for Joint Research in France

2005, 2006, 2007 People's Scholarship

Language Proficiency

Chinese: Native speaker

English: Excellent

Spanish: Good (Total 4 years in Spain)

Certificate:

English: IELTS: 6.5

Experience of Projects (within the past 5 Years)

Ongoing projects

01/2017—12/2018 Millimeter-wave ultra wideband MIMO channel measurement and modeling in Typical Rail

- Traffic Scenarios for Train Control and Safety, sponsored by State Key Lab of Rail Traffic Control and Safety, China, **host**
- 06/2017—02/2018 Ray-tracing Based Research on MHN-E System, sponsored by Electronics and Telecommunications Research Institute (ETRI), **participant: ray-tracing and stochastic channel modeling for high-speed train scenarios.**
- 09/2017—08/2018 High-performance ray tracing algorithm research for 5G mobile communication, sponsored by ZTE corporation, **participant: developing efficient ray-tracing algorithms, design and contribute on cloud based ray tracing simulation platform.**
- 01/2017—01/2019 Millimeter-wave ultra-broadband channel measurement and modeling for smart rail traffic driverless train, sponsored by Beijing Natural Science Foundation, **participant: mmWave channel modeling for different smart rail traffic scenarios.**
- 01/2018—01/2021 Dynamic Measurement- and High Performance Ray-Tracing-Based Millimeter Wave Ultra-Wideband Mobile Channel Modeling, sponsored by National Natural Science Foundation of China, **participant: developing ray-tracing calibration methodology to improve the reliability and usability of ray-tracing based channel models.**

Finished projects

- 10/2016—10/2017 Wireless backhaul resource optimization algorithm for 5G mobile communication, sponsored by ZTE corporation, **host.**
- 12/2015—12/2016 Channel Modeling for 5G Railway Scenarios, sponsored by ZTE corporation, **participant**
- 01/2016—01/2017 Key Technologies for 5G Railway Scenarios, sponsored by NOKIA, **participant**
- 06/2015—06/2017 Massive MIMO Channel Measurement and Modeling, sponsored by National High Technology Research and Development Program, **participant**
- 06/2015—06/2017 Research on Massive MIMO Virtual Antenna Array Channel Modeling for 5G, sponsored by Major project of Beijing science and Technology Commission, **participant**

Activities in international bodies

- **IEEE 802.15 TG3d (100G):** analyzing and modeling channel for THz kiosk downloading application
- **IMT-2020:** member of 5G mobile communication standardization working group
- **EURNEX (EUropean rail Research Network of EXcellence):** member of Pole 5 “Intelligent mobility”
- **Conferences and Meetings**
 - 09/2017 **TPC member** of IEEE VTC2017-Fall
 - 05/2016 **Session Chair** of IEEE VTC2016-spring in the session " 6E: Millimeter-Wave Channels".

Best Paper Awards

- Best Paper Award of ICC'2017 - The sixth IEEE/CIC International Conference on Communications in China, 2017
- Best Paper Award of CNSRP'2017 - 14th Chinese National Symposium on Radio Propagation, 2017
- Best Paper Award of ITST2017 - 15th edition of International Conference on Intelligent Transport Systems

(ITS) Telecommunications, 2017

- Best Paper Award of ISAPE 2016 - 11th International Symposium on Antennas, Propagation and EM Theory, 2016
- Best Paper Award of *JCE 2013- IV Jornadas de Computación Empotrada*, 2013

Invited Talks

15/06/2017 “Enabling Smart Future 2020 via Ray-tracing Technology”, The 4th conference on information communication technology testing, Shanghai

Publication List

Total 48 publications: 13 journal papers (first-authored 7 SCI journal papers), 26 conference papers, 1 patent, 3 standards and 5 technical documents and recommendations in standardization organizations.

Journal Papers

1. **D. He**, B. Ai, K. Guan, L. Wang, Z. Zhong, and T. Kuerner “High-Performance Ray-Tracing Simulation Platform and Its Application to Mobile Communications,” submitted, *IEEE Communications Surveys & Tutorials*, 2017.
2. **D. He**, B. Ai, K. Guan, Z. Zhong, B. Hui, J. Kim, H. Chung, and I. Kim, “Channel Measurement, Simulation and Analysis for High Speed Railway Communications in 5G Millimeter-Wave Band,” *IEEE Transactions on Intelligent Transportation Systems*, vol. PP, no. 99, pp. 1-15, Aug 2017.
3. **D. He**, B. Ai, K. Guan*, J. Moreno, L. Tian, Z. Zhong, and A. Hrovat “Influence of Typical Railway Objects in mmWave Propagation Channel,” Early access, *IEEE Transactions on Vehicular Technology*, vol. PP, no. 99, pp. 1-1, Dec 2017.
4. **D. He**, K. Guan, A. Fricke, B. Ai, R. He, Z. Zhong, and T. Kuerner “Stochastic Channel Modeling for Kiosk Applications in the Terahertz Band,” *IEEE Transactions on Terahertz Science and Technology*, vol. 7, no. 5, pp. 502-513, Jul 2017.
5. B. Ai, K. Guan, R. He, J. Li, G. Li, **D. He**, Z. Zhong, and K. Saidul Huq, “On Indoor Millimeter Wave Massive MIMO Channels: Measurement and Simulation,” *IEEE Journal on Selected Areas in Communications*, 2017. vol. 35, no. 7, pp. 1678-1690, Jul. 2017.
6. B. Ai, R. He, G. Li, K. Guan, **D. He**, G. Shi, and Z. Zhong, “Determination of Cell Coverage Area and its Applications in High-Speed Railway Environments,” *IEEE Transactions on Vehicular Technology*, vol. 66, no. 5, pp. 3515-3525, May 2017.
7. Y. Li, R. He, S. Lin, K. Guan, **D. He**, Q. Wang, and Z. Zhong, “Cluster-Based Non-Stationary Channel Modeling for Vehicle-to-Vehicle Communications,” *IEEE Antennas and Wireless Propagation Letters*, vol. 16, pp. 1419-1422, Nov. 2016.
8. K. Guan, B. Ai, A. Fricke, **D. He**, Z. Zhong, D. W. Matolak and T. Kurner. “Excess Propagation Loss Modeling of Semiclosed Obstacles for Intelligent Transportation System,” *IEEE Transactions on Intelligent Transportation Systems*, vol. 17, no. 8, pp. 2171-2181, Aug. 2016.
9. K. Guan, B. Ai, A. Fricke, **D. He**, Z. Zhong, D. Matolak, and T. Kuerner, “Excess Propagation Loss of Semi-Closed Obstacles for Inter/Intra-Device Communications in the Millimeter-Wave Range,” *Journal of Infrared, Millimeter, and Terahertz Waves*, vol. 37, no. 7, pp. 676-690, Jul. 2016.

10. K. Guan, A. Fricke, **D. He**, Z. Zhong, D. W. Matolak, T. Kürner, "Excess Propagation Loss of Semi-Closed Obstacles for Inter/Intra-Device Communications in the Millimeter-Wave Range," *Journal of Infrared, Millimeter, and Terahertz Waves*, vol. 37, no. 7, pp. 679-690, Feb. 2016.
11. **D. He**, G. Liang, J. Portilla and T. Riesgo. "A Novel Method for Radio Propagation Simulation Based on Automatic 3D Environment Reconstruction," *Radioengineering*, vol. 21, no. 1, pp. 985-992, Dec. 2012.
12. **D. He**, G. Mujica, G. Liang, J. Portilla and T. Riesgo. "Radio Propagation Modeling and Real Test of ZigBee Based Indoor Wireless Sensor Networks," *Journal of Systems Architecture*, vol. 60, no. 9, pp. 711-725, Oct. 2014.
13. **D. He**, G. Mujica, J. Portilla and T. Riesgo. "Modeling and planning reliable wireless sensor networks based on multi-objective optimization genetic algorithm with changeable length," *Journal of Heuristics*, vol. 21, no. 2, pp. 257-300, Apr. 2014.

Conference Papers

1. **D. He**, B. Ai, K. Guan, L. Zhang, Y. Yang, Z. Zhong, and A. Hrovat, "Significance Analysis for Typical Objects in mmWave Urban Railway Propagation Environment," Accepted, 2017 IEEE Globecom workshop, Singapore, December 2017.
2. **D. He**, K. Guan, B. Ai, A. Fricke, R.S. He, Z.D. Zhong, A. Kasamatsu, I. Hosako, H. Ogawa, and T. Kuerner, "Kiosk Channel Modeling for Kiosk Downloading Communication System at 300 GHz", 11th European Conference on Antennas and Propagation (EuCAP2017), Paris, France, pp. 1331-1335, April 2017.
3. **D. He**, J.Y. Yang, K. Guan, B. Ai, Z.D. Zhong, Z.Y. Zhao, D.S. Miao, and H. Guan, "Ray-tracing Simulation and Analysis for 3GPP High Speed Scenarios", 11th European Conference on Antennas and Propagation (EuCAP2017), Paris, France, pp. 2890-2894, April 2017.
4. Y. Lin, Z. Zhong, K. Guan, and D. He, "Channel Characteristic of Millimeter Wave Massive MIMO Under Train-Ground Scenario Based on Ray Tracing Method", in Proc. 14th Chinese National Symposium on Radio Propagation (CNSRP'2017), pp. 1-6, 2017. **(Best Paper Award)**
5. K. Guan, **D. He**, A. Hrovat, B. Ai, Z. Zhong, and T. Kuerner, "Challenges and Chances for Smart Rail Mobility at mmWave and THz Bands from the Channels Viewpoint," 2017 15th International Conference on ITS Telecommunications (ITST), Warsaw, Poland, pp. 1-5, May 2017. **(Best Paper Award)**
6. G. Li, K. Guan, B. Ai, **D. He**, R. He, B. Hui, J. Kim, and Z. Zhong, "On the High-speed Railway Communication at 30 GHz Band: Feasibility and Channel Characteristics", 11th International Symposium on Antennas, Propagation and EM Theory, Guilin, China, pp. 796-799, October 2016. **(Best Paper Award)**
7. K. Guan, X. Lin, **D. He**, B. Ai, Z. Zhong, Z. Zhao, D. Miao, H. Guan, and T. Kuerner, "Scenario Modules and Ray-Tracing Simulations of Millimeter Wave and Terahertz Channels for Smart Rail Mobility," 11th European Conference on Antennas and Propagation (EuCAP2017), Paris, France, pp. 113-117, April 2017.
8. K. Guan, G. Li, **D. He**, L. Wang, B. Ai, R. He, Z. Zhong, L. Tian, and J. Dou, "Spatial Consistency of Dominant Components between Ray-Tracing and Stochastic Modeling in 3GPP High-Speed Train Scenarios," 11th European Conference on Antennas and Propagation (EuCAP2017), Paris, France, pp. 3182-3186, April 2017.
9. **D. He**, B. Ai, K. Guan, Z. Zhong, L. Tian, and J. Dou, "Channel Analysis for Millimeter-Wave Railway Communications in Urban Environment", to appear, 32nd URSI GASS, Montreal, 19-26 August 2017.
10. Z. Su, B. Ai, **D. He**, G. Ma, K. Guan, N. Wang, and D. Zhang, "User Association and Backhaul Bandwidth Allocation for 5G Heterogeneous Network at Millimeter Wave Band", to appear, The 6th IEEE/CIC International Conference on Communications in China (ICCC2017), Qingdao, China, October 2017. **(Best Paper Award)**

11. X. Liu, B. Ai, **D. He**, K. Guan, Z. Zhong, and L. Wang, "The calibration of Ray tracer based on indoor office measurement at 28 GHz," 2017 IEEE International Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting, San Diego, CA, USA, 2017, pp. 1415-1416.
12. K.M. Li, **D. He**, K. Guan, B. Ai, Z. Zhong, L. Tian, and J. Dou, "Efficient environment model for intra-wagon millimeter wave ray-tracing simulation," 2017 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, San Diego, CA, USA, 2017, pp. 1909-1910.
13. G. Li, B. Ai, L. Wang, K. Guan, **D. He**, Z. Zhong, L. Tian, and J. Dou, "Scattering studies on sorted materials of high-speed rail scenario for propagation channel simulations," 2017 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, San Diego, CA, USA, 2017, pp. 1849-1850.
14. X. Lin, B. Ai, **D. He**, K. Guan, Z. Zhong, L. Tian, and J. Dou, "Measurement based ray tracer calibration and channel analysis for high-speed railway viaduct scenario at 93.2 GHz," 2017 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, San Diego, CA, USA, 2017, pp. 617-618.
15. L. Wang, B. Ai, **D. He**, G. Li, K. Guan, R. He, and Z. Zhong, "Channel characteristics analysis in smart warehouse scenario," 2017 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, San Diego, CA, USA, 2017, pp. 1417-1418.
16. Y. Lin, Z. Zhong, **D. He**, K. Guan, and D. Zhang, "Channel Simulation of Adaptive Beamforming at 60 GHz Millimeter-Wave band under High-Speed Railway Scenario", 2017 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, San Diego, CA, USA, 2017, pp. 1905-1906.
17. S. Wei, B. Ai, **D. He**, K. Guan, L. Wang, and Z. Zhong, "Calibration of ray-tracing simulator for millimeter-wave outdoor communications," 2017 IEEE International Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting, San Diego, CA, USA, 2017, pp. 1907-1908.
18. L. Wang, K. Guan, B. Ai, G. Li, **D. He**, R. He, L. Tian, J. Dou, Z. Zhong, "An Accelerated Algorithm for Ray Tracing Simulation based on High-Performance Computation", 11th International Symposium on Antennas, Propagation and EM Theory, Guilin, China, pp. 512-515, October 2016.
19. R. He, M. Yang, L. Xiong, H. Dong, K. Guan, **D. He**, B. Zhang, D. Fei, B. Ai, Z. Zhong, Z. Zhao, D. Miao, and H. Guan, "Channel Measurements and Modeling for 5G Communication Systems at 3.5 GHz Band," to appear, URSI AP-RASC 2016, Daejeon, Korea, August 2016.
20. J. Yang, B. Ai, K. Guan, R. He, Q. Wang, **D. He**, Z. Zhao, D. Miao, and H. Guan, "Quasi-Stationarity Regions Analysis for Channel in Composite High-Speed Railway Scenario," 2016 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, Puerto Rico, pp. 1699-1700, June 2016.
21. J. Yang, B. Ai, K. Guan, **D. He**, R. He, B. Zhang, Z. Zhong, Z. Zhao, D. Miao, and H. Guan, "Deterministic Modeling and Stochastic Analysis for Channel in Composite High-Speed Railway Scenario," IEEE 83rd Veh. Technol. Conf. (VTC2016-Spring), Nanjing, China, pp. 1-5, May 2016.
22. **D. He**, Nathalie Mitton and David Simplot-Ryl. "An Energy Efficient Adaptive HELLO Algorithm for Mobile Ad Hoc Networks," in Proc. of **MSWiM 2013**.
23. **D. He**, Javier Portilla and Teresa Riesgo. "A 3D multi-objective optimization planning algorithm for wireless sensor networks," in Proc. of **IECON 2013**.
24. **D. He**, Gabriel Mujica, Guixuan Liang, Jorge Portilla and Teresa Riesgo. "Radio Propagation Modeling and Measurements for ZigBee Based Indoor Wireless Sensor Networks," in Proc. of **JCE 2013. (Best Paper Award)**
25. **D. He**, Guixuan Liang, Jorge Portilla and Teresa Riesgo. "A Novel Method for Radio Propagation Simulation Based on Automatic 3D Environment Reconstruction," in Proc. of **EuCAP 2012**.
26. **D. He**, Gabriel Mujica, Jorge Portilla and Teresa Riesgo. "Simulation Tool and Case Study for Planning

Standard

27. IEEE Standard for High Data Rate Wireless Multi-Media Networks--Amendment 2: 100 Gb/s Wireless Switched Point-to-Point Physical Layer," in IEEE Std 802.15.3d-2017 (Amendment to IEEE Std 802.15.3-2016 as amended by IEEE Std 802.15.3e-2017), vol., no., pp.1-55, Oct. 18 2017.
28. I. Seto, K. Hiraga, T. Kürner, A. Fricke, B. Peng, S. Rey, M. Yaita, H. Song, A. Kasamatsu, I. Hosako, **D. He**, K. Guan, H. Ogawa, B. Ai, Z. Zhong, P. Le Bars and A. Mounir, "Channel Modelling Document (CMD)", DCN: 15-14-0310-19-003d, IEEE 802.15 Plenary Meeting, Macau, Mar. 2016.
29. "Principles and practices for security software-defined networks," ONF Technical recommendation.

Technical Documents

30. **D. He**, K. Guan, B. Ai, "Comparison of Ray Tracing and Stochastic Modeling," IMT-2020 High frequency and technology group, Beijing, China, Sep. 2016.
31. **D. He**, K. Guan, B. Ai, Z. Zhong, A. Kasamatsu, H. Ogawa, I. Hosako and M. Yaita, "Kiosk Channel Modeling", DCN: IEEE802.15-16-03-003d, IEEE 802 Plenary Meeting, Macau, Mar. 2016.
32. J. Kim, K. Guan, **D. He**, G. Noh, B. Hui, H. Chung, and I. Kim, "Channel Modeling for MHN-E System", DCN: IEEE802.15-17-0127-00-hrrc, IEEE 802.15 Plenary Meeting, Canada, Mar. 2017.
33. K. Guan, X. Lin, **D. He**, B. Ai, Z. Zhong, Z. Zhao, D. Miao, F. Guan, and T. Kuerner, "Scenario Modules and Ray-Tracing Simulations of Millimeter Wave and Terahertz Channels for Smart Rail Mobility," CA15104TD(17)03070, COST CA15104 Management Committee and Scientific Meeting, Portugal, pp.1-5, February 2017.
34. **D. He**, K. Guan, L. Wang, B. Ai, and Z. Zhong, "High Performance Cloud Ray-Tracing Simulator and Its Application to High Speed Train Communications," TD(17)03004, COST CA15104 Management Committee and Scientific Meeting, Portugal, pp.1-16, February 2017.

Patent

35. K. Guan, J. Yang, B. Ai, R. He, Y. Ming, Z. Zhong, D. He, RCS computation for composed scattering objects, No: 201510920970.8