

Zhongxia Simon He (Ph. D)

Personal Information

Year of Birth: 1984
Place of Birth: Beijing, China
Citizenship: Sweden
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Professional Associations and Awards

2015 Chalmers University Stiftelsen Pris
2014 SKAPA Framtidens Innovatör Award
2013 Venture Cup Regional Finals Winner

2017 – 2020 Work Group Leader of Integrated Microwave Photonic for Automotive, EU COST ACTION CA16220

2012 Founder and Owner of Wyberry Technologies AB
2011 Founder and Owner of Sinowave AB

Education and Professional Experience

Current: **Assistant Professor, Chalmers University of Technology**
2014 – 2015 Post-doctoral Researcher, Chalmers University of Technology
2014 Ph. D degree, Chalmers University of Technology
2008 – 2014 Ph. D student, Chalmers University of Technology
2008 Master of Science degree (Best Master Thesis Award), Beijing Institute of Technology
2006 Bachelor of Science degree (Honored Graduate), Beijing Institute of Technology

Patents

“Multi-layer waveguide, arrangement and method for production thereof”, SE-1751333-4
“Carrier Recovery and Demodulation”, WO 2013162444 A3
“A transmitter device and a corresponding receiver”, WO 2015051855 A1
“Metod och arrangemang för bärvågsåtertagning”, SE 1351513-5
“En anordning och ett förfarande för återhämtning av bärvågssignaler”, SE 1250404-9
“A 77 GHz Transceiver Module for Car Collision Avoidance RADAR”, CN201120219626.3
“A 77 GHz Car Collision Avoidance RADAR System”, CN201110175648.9
“A 77 GHz Antenna for Car Collision Avoidance RADAR”, CN201120219629.7

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Course Responsibility

EME110

Design of monolithic microwave integrated circuits (MMIC)
Master level 15-25 students each year, course responsible

MCC150

Implementation of digital signal processing systems
Master level 25-50 students each year, creator of the course, examiner

Organized Short Courses at IEEE conferences

IEEE International Microwave Symposium 2018

“Distributed antenna systems (DAS) based on microwave photonics”

IEEE Asia Pacific Microwave Symposium 2018

“Radar accuracy improvement with new radar waveforms” & “Distributed antenna systems (DAS) based on microwave photonics”

Student Supervision

Master Thesis Supervision (5 student)

1. Josef Hederström, Master Thesis titled "Construction of FPGA-based Test Bench for QAM Modulators", 2010
2. Aron Svensson and Jonathan Flod, Master Thesis Titled "System design of an FPGA and analog based point-to-point wireless link", 2014
3. Chengliang Liu, Master Thesis titled "Radar and communication signal processing algorithm and implementation using OFDM based waveform", 2018
4. Arvid Ziemann, Master Thesis titled "Waveform Design and System Verification of Millimeter Wave Radar", 2019

PhD student co-supervision (5 student)

1. Dhecha Nopchinda, Licentiate Thesis titled "Digital Techniques for High Data-rate Communication at Millimeter-wave", 2017
2. Jingjing Chen, PhD Thesis titled "Multi-Gigabaud Millimeter-Wave Communication - Challenges and Solutions", 2017
3. Sona Carpenter, PhD Thesis titled "Millimeter-wave Transceiver ICs for Ultrahigh Data Rate Communications Using Advanced III-V and Silicon Technologies", 2018
4. Ahmed Hassona, Licentiate Thesis titled "Non-galvanic Interconnects for Millimeter-wave Systems", 2018
5. Sining An, Licentiate Thesis titled "Multi-Gigabaud Solutions for Millimeter-wave Communication", 2018

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Publication after Ph.D (Citation 279, h-index: 10, i10-index: 11)

1. S. Carpenter, **Z. He**, M. Bao, H. Zirath, "A Highly Integrated Chipset for 40 Gbps Wireless D-Band Communication Based on a 250 nm InP DHBT Technology," in Compound Semiconductor Integrated Circuit Symposium (CSICs), 2014 IEEE, pp.1-4, 19-22 Oct. 2014
2. X. Zeng, A. Fhager, **Z. He**, M. Persson, P. Linner and H. Zirath, "Development of a Time Domain Microwave System for Medical Diagnostics," in *IEEE Transactions on Instrumentation and Measurement*, vol. 63, no. 12, pp. 2931-2939, Dec. 2014.
3. J. Chen, **Z. He**, Y. Li, T. Swahn and H. Zirath, "A data-rate adaptable modem solution for millimeter-wave wireless fronthaul networks," 2015 IEEE International Conference on Communication Workshop (ICCW), London, 2015, pp. 1-6.
4. **Z. He**, D. Kuykenstierna, Szhau Lai and H. Zirath, "A 12 Gbps analog QPSK baseband receiver based on injection-locked VCO," 2015 IEEE MTT-S International Microwave Symposium, Phoenix, AZ, 2015, pp. 1-4.
5. **Z. He** et al., "A Hardware Efficient Implementation of a Digital Baseband Receiver for High-Capacity Millimeter-Wave Radios," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 63, no. 5, pp. 1683-1692, May 2015.
6. **Z. He**, D. Nopchinda, T. Swahsn and H. Zirath, "A 15-Gb/s 8-PSK Demodulator With Comparator-Based Carrier Synchronization," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 63, no. 8, pp. 2630-2637, Aug. 2015.
7. S. An, J. Chen, **Z. He**, S. Wang and H. Zirath, "A 40 Gbps DQPSK modem for millimeter-wave communications," 2015 Asia-Pacific Microwave Conference (APMC), Nanjing, 2015, pp. 1-3.
8. S. Carpenter, D. Nopchinda, M. Abbasi, **Z. He**, M. Bao, T. Eriksson, H. Zirath, "A D -Band 48-Gbit/s 64-QAM/QPSK Direct-Conversion I/Q Transceiver Chipset," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 64, no. 4, pp. 1285-1296, April 2016.
9. O. Habibpour, **Z. He**, W. Strupinski, N. Rorsman, T. Ciuk, H. Zirath, "Graphene FET Gigabit ON-OFF Keying Demodulator at 96 GHz," in *IEEE Electron Device Letters*, vol. 37, no. 3, pp. 333-336, March 2016.
doi: 10.1109/LED.2016.2517212
10. J. Chen, **Z. He** et al., "An Energy Efficient 56 Gbps PAM-4 VCSEL Transmitter Enabled by a 100 Gbps Driver in 0.25 μm InP DHBT Technology," in *Journal of Lightwave Technology*, vol. 34, no. 21, pp. 4954-4964, Nov.1, 1 2016.
11. O. Habibpour, **Z. He**, W. Strupinski, N. Rorsman, T. Ciuk, H. Zirath, "Wafer scale millimeter-wave integrated circuits based on epitaxial graphene in high data rate communication", Nature Scientific Report
12. A. Hassona, **Z. He**, C. Mariott, F. Dielacher, V. Vassilev, Y. Li, J. Oberhammer, H. Zirath, 'A non-galvanic D band MMIC-to-waveguide Transition using eWLB packaging Technology', IEEE MTT-S International Microwave Symposium, 2017
13. D. Nopchinda, O. Habibpour, **Z. He**, H. Zirath 'Generation of multi-Gigabit/s OFDM signals at W-band by a Graphene FET MMIC mixer', IEEE MTT-S International Microwave Symposium 2017

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14. M. Bao, **Z. S. He** and H. Zirath, "A 100-145 GHz Area-Efficient Power Amplifier in a 130 nm SiGe Technology", EuMIC 2017
15. S. Carpenter, **Z. S. He** and H. Zirath, "A Direct Carrier I/Q Modulator for High-Speed Communication at D-Band Using 130 nm SiGe BiCMOS Technology", EuMW 2017
16. N. Seyedhosseinzadeh, A. Nabavi, S. Carpenter, **Z. S. He**, M. Bao and H. Zirath "A 100-140 GHz SiGe-BiCMOS Sub-Harmonic Down-Converter Mixer", EuMW 2017
17. S. Giannakopoulos, K. Eriksson, I. Darwazeh, **Z. He**, H. Zirath, "Ultra-Broadband Common Collector-Cascode 4-cell Distributed Amplifier in 250nm InP HBT Technology with over 200 GHz Bandwidth", EuMW2017
18. M. Gavell, S. Gunnarsson, I. Angelov, **Z. He**, M. Ferndahl, H. Zirath, "Design and analysis of a wideband Gilbert cell VGA in 0.25 μm InP DHBT Technology with DC-40GHz frequency response", in IEEE Transactions on Microwave Theory and Techniques 2017
19. O. Habibpour, **Z. He**, W. Strupinski, N. Rorsman, T. Ciuk, H. Zirath, "A W-band MMIC Resistive Mixer Based on Epitaxial Graphene FET", IEEE Microwave and Wireless Component Letter, 2017
20. J. Chen, **Z. He**, D. Kuylenstierna, T. Eriksson, T. Emanuelsson, T. Swahn, H. Zirath, "Does LO Noise Floor Limit Performance in Multi-Gigabit Millimeter-Wave Communication?", IEEE Microwave and Wireless Component Letter, 2017
21. S. Carpenter, **Z. He**, H. Zirath, "Balanced active frequency multipliers in D and G bands using 250nm InP DHBT technology", IEEE Compound Semiconductor integrated Circuit Symposium (CSICS) 2017
22. C. Du, **Z. He**, et al, "Experimental verification of phase noise robust spiral constellation for THz and optical communication", APMC 2017
23. S. Giannakopoulos, **Z. He**, I. Darwazeh, H. Zirath, "Differential common base TIA with 56 dB Ohm gain and 45 GHz bandwidth in 130 nm SiGe", APMC 2017
24. **Z. He**, et al, "Optoelectronics Enabled Dense Patch Antenna Array for Future 5G Cellular Applications", European Conference on Optical Communication (ECOC) 2017
25. A. Hassona, V. Vassilev, **Z. He** et al, "Silicon Taper Based D-Band Chip to Waveguide Interconnect for Millimeter-Wave Systems", IEEE Microwave and Wireless Components Letter 2017
26. D. Nopchinda, **Z. He**, et al, "8-PSK Upconverting Transmitter Using E-band Frequency Sextupler", IEEE Microwave and Wireless Components Letter, 2018
27. S. Carpenter, **Z. S. He** and H. Zirath, "A 14.2 dBm, 90-140 GHz Wideband Frequency Tripler in 250-nm InP DHBT Technology", IEEE Microwave and Wireless Components Letter 2018
28. Jingjing. Chen, et al, "Influence of White LO Noise on Wideband Communication", in IEEE Transactions on Microwave Theory and Techniques 2018
29. S. Carpenter, **Z. S. He** and H. Zirath, "Multi-functional D-band I/Q modulator/demodulator MMICs in SiGe BiCMOS technology", International Journal of Microwave and Wireless Technologies, 2018

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30. F. Strömbeck, **Z. S. He** and H. Zirath, "A RF-DAC based 40 Gbps PAM modulator with 1.2pJ/bit Energy Efficiency at millimeterwave band", IEEE MTT-S International Microwave Symposium 2018
31. A. Hassona, **Z. S. He** et. al., "A low-loss D-band chip to waveguide transition using unilateral finline structure ", IEEE MTT-S International Microwave Symposium 2018
32. A. Vosoogh, **Z. S. He** and H. Zirath, "A Cost-effective D-band Multi-layer Rectangular Waveguide Transmission line based on Glide-symmetric EBG structure", EuCAP, 2018
33. A. Hassona, **Z. S. He** et. al., "A low-cost D-band slot antenna based waveguide transition on LCP substrate ", IEEE European Microwave Conference, 2018
34. M. Bao, **Z. S. He** et. al., "A 110-147 GHz Frequency Sixtupler in a 130 nm SiGe BiCMOS Technology", IEEE European Microwave Conference, 2018
35. S. Giannakopoulos, **Z. He**, and H. Zirath, "Tunable Equalizer for 64 Gbps data communication systems in 130nm SiGe", IEEE APMC 2018
36. **Z. He**, et. al., " A 140 GHz Transmitter with an Integrated Chip-to-Waveguide Transition using 130nm SiGe BiCMOS Process", IEEE APMC 2018
37. **Z. He**, et. al., "A 90-140 GHz, High Power Frequency Source Packaged in a Self-aligned Waveguide Module", IEEE APMC 2018
38. A. Hassona, **Z. He**, et. al., "Demonstration of +100 GHz Interconnects in eWLB Packaging Technology", IEEE Transactions on Components, Packaging and Manufacturing Technology, 2019
39. T. Thanh, et. al., "A low phase noise D-band signal source based on 130 nm SiGe BiCMOS and 0.15 μm AlGaIn/GaN HEMT Technologies", International Journal of Microwave and Wireless Technologies, 2019 (accepted)
40. A. Vosoogh, H. Zirath and **Z. He**, "Novel Air-filled Waveguide Transmission Line Based on Multi-layer Thin Metal Plates", IEEE Trans. Terahertz Science and Technology, 2019
41. A. Vosoogh, et. al, "An E-band Compact Frequency Division Duplex Radio Front-end Based on Gap Waveguide Technology", EuCAP 2019 (accepted)
42. F. Strömbeck, **Z. He** and H. Zirath, "AMCW RADAR of Micrometer Accuracy Distance Measurement and Monitoring", IEEE IMS 2019 (accepted)
43. S. Yang, et. al., "A D-band Communication Transmitter Module with a Novel Self-aligned Microstrip line-to-Waveguide Transition", Journal of infrared and millimeter waves.
44. S. Giannakopoulos, **Z. He**, I. Darwazeh, H. Zirath, "Transimpedance Amplifiers with 133 GHz bandwidth on 130 nm InP DHBT", Electronics Letters, 2019
45. S. An, **Z. He**, et. al., "A synchronous Baseband Receiver for High Data Rate Millimeterwave Communication Systems", IEEE Microwave and Wireless Component Letter
46. I. Sezgin, et. al., "Effect of VCSEL characteristics on ultra-high speed sigma-delta-over-fiber communication links", Journal of Lightwave Technology, 2019
47. A. Vosoogh, et. al, "Compact Integrated Full Duplex Gap Waveguide Based Radio Front-end For Multi-Gbit/s Point-to-Point Backhaul", in IEEE Transactions on Microwave Theory and Techniques, 2019

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48. A. Hassona, Z. He, et. al., "F-band Low-loss Tapered Slot Transition for Millimeter-wave System Packaging", IEEE European Microwave Conference, 2019