张 柘 (Zhe Zhang)

研究员, 博士生导师, 海外优青, 中科院"百人计划", 苏州市"姑苏领军人才"
Professor, Ph.D. Supervisor

Sex:	男 (M)
DOB:	01/31/1988
Address:	Room B203-12, Lab 22
	Aerospace Information Research Institute, Chinese Academy of Sciences, Suzhou
	158 Dushuhu Ave, Suzhou Industrial Park, Suzhou, Jiangsu 215000, China
Tel:	+86-512-69836908; +86-13466717625; +1-(202)531-7210
Email:	zhangzhe01@aircas.ac.cn; nagatokana@gmail.com
Homepage:	https://people.ucas.ac.cn/~zhe.

Working Experience (工作经历)

2023.01–	Lab Director Assistant (主任助理), Academic Leader (学术带头人)
2022.04–	Professor (研究员), Ph.D Supervisor (博士生导师)
2021.01–2022.04	Associate Professor (副研究员, "百人计划" 创新研究员), 硕士生导师
	Aerospace Information Research Institute, CAS, Suzhou
	中国科学院空天信息创新研究院 苏州研究院
	苏州空天信息研究院, Suzhou, Jiangsu 215000, China
	研究方向: 稀疏信号处理, 稀疏微波成像, 合成孔径雷达,
	三维成像, 深度学习与信号处理的结合, 机器学习.
2016.12–2020.06	Post-Doctoral Research Fellow (博士后研究员)
	George Mason University, Fairfax, VA 22030, USA
	Advisor: Tian, Zhi (田智), Professor, IEEE Fellow
	研究方向: 稀疏信号处理, 原子范数优化, 深度学习与信号处理的结合.
2015.12–2016.11	Post-Doctoral Research Scientist (博士后研究员)
	George Washington University, Washington, DC 20052, USA
	Advisor: Tian, Zhi (田智), Professor, IEEE Fellow
	Cheng, Xiuzhen (成秀珍), Professor, IEEE Fellow
	研究方向: 稀疏信号处理, 原子范数优化.

Education (教育经历)

2009.09–2015.07	Ph.D. (工学博士) / 信号与信息处理
	Institute of Electronics, Chinese Academy of Sciences
	University of Chinese Academy of Sciences
	中国科学院电子学研究所 / 中国科学院大学, Beijing 100190, China
	Supervisor: 吴一戎, 中国科学院院士, 研究员
	研究方向: 稀疏微波成像, 稀疏信号处理, 合成孔径雷达.
2014.01–2014.04	Visiting Student (访问学生)
	University of Connecticut, Storrs, CT 06269, USA
	Supervisor: Zhou, Shengli (周胜利), Professor, IEEE Fellow.

Education Cont. (教育经历)

2004.09–2008.07	B. Eng. (工学学士) / 信息工程，电子与信息工程学院
2003.09–2004.07	Special Class for Gifted Young (少年班)
	Xi'an Jiaotong University
	西安交通大学, Xi'an, Shaanxi 710049, China.

Research Projects (研究经历)

2022.1–
稀疏信号处理及其在微波成像中的应用研究，300 万元
资助：国家自然科学基金 *(NSFC)* 优秀青年科学基金 *(海外)*
项目主持人.

2021.1–
稀疏信号处理与深度学习及其在微波成像中的应用，400 万元
资助：中国科学院"百人计划"
项目主持人.

2021.12–
微波三维成像的高效感知系统与技术的研发，50 万元
资助：苏州市科技发展项目，#ZXL2022381
项目主持人.

2023.1–
＊＊＊＊＊＊＊ SAR 成像处理与信息提取，200 万元
资助：中国科学院＊＊＊＊＊＊重点部署项目
课题负责人.

2021.7–
结构信号的自适应高效感知理论及在微波成像中的应用，130 万元
资助：中科院空天院前沿科学与颠覆性先导专项
项目主持人.

2023.1–
＊＊＊＊＊＊＊＊星载 SAR 系统技术，1.06 亿元
资助：*KJW ＊＊＊＊* 创新特区重点项目
项目核心参与人，处理系统负责人.

2023.1–
合成孔径雷达微波视觉三维成像理论与应用基础研究，500 万元
资助：*KJW ＊＊＊＊* 基础加强课题
子课题负责人.

2020.1–
街角盲区建筑布局重建机理与方法，2000 万元
资助：国家自然科学基金 *(NSFC)* 重大项目，#61991421, 61991420
子课题负责人.

2018.8–2018.11
A Gated LFMCW TDMA MIMO SAR based Hidden Chamber Detector，15 万美元
资助：*USSOCOM SBIR*，#S173-004-0118
信号处理及仿真负责人.

2015.12–2020.6
Task-Cognizant Sparse Sensing for Inference，40 万美元
资助：*National Science Foundation (NSF) Standard Grant*, #1527396
参与.

Research Projects Cont. (研究经历)

2010.04–2015.07 | **稀疏微波成像的理论、体制和方法研究**，3300 万元
资助：国家重大基础科学研究计划 *(973 计划)*, #2010CB731900
机载部分负责人.

2012.04–2015.07 | **先进微波探测与信息处理**，430 万元
资助：中国科学院 / 国家外国专家局 "创新团队" 合作伙伴计划
核心参与人.

Honors (荣誉)

2022.01 | 国家优秀青年基金 (海外) / 国家自然科学基金委员会 *(NSFC)*

2021.01 | 中国科学院 "百人计划" / 中国科学院

2021.12 | 苏州市 "姑苏领军人才" / 苏州市

Awards (获奖)

	全国颠覆性技术创新大赛 / 中华人民共和国科技部
2022.03	总决赛优秀奖
2021.12	优胜奖
2021.12	优秀奖

2008.04 | 德州仪器 (TI) DSP 大奖赛 / *Texas Instruments*
优胜奖

	美国大学生数学建模竞赛 / *COMAP*
2008.02	一等奖
2007.02	二等奖

2006.09 | 中国大学生数学建模竞赛 / 中国工业与应用数学学会 *(CSIAM)*
二等奖

Professional Skills (专业技能)

专业方向： 深度学习/AI, 机器学习与信号处理方法的结合, 稀疏信号处理与低秩优化,
合成孔径雷达.

专业技能： 大型在线社区开发、运营与维护, Linux 运维, GNU 工具链, LaTeX.
MATLAB, C/C++/Python/JavaScript.

Languages (语言)

ENGLISH: Professional (Reside in US for 5 years, CET-6/PETS-5/WSK pass, TOEFL 96)
JAPANESE: Fair

Hobbies (兴趣)

IT, 开源, 编程, Linux, 数码, 互联网.
音乐, 动漫, 历史, 常旅客.

Open Source Projects and Services (主持开源项目)

2006.04–2015.11	兵马俑 BBS (http://bbs.xjtu.edu.cn/, http://bmybbs.com/) Host: https://github.com/bmybbs?type=source *Technical Leader* 兵马俑 BBS 是中国教育网最大的 BBS 站点之一, 属于西安交通大学. 兵马俑 BBS 服务 50000 多名用户, 同时在线数最高 5000. 项目代码超过 10 万行.
2010.06–2019.04	科苑星空 BBS (http://bbs.ucas.ac.cn/, http://kyxk.net/) *Technical Leader* 科苑星空 BBS 是中国科学院的官方社区. 科苑星空 BBS 服务 30000 多名用户, 同时在线数最高 1500. 项目代码超过 12 万行.
2018.09–	hCNN (https://github.com/pzhg/hCNN) *Principle Developer* hCNN 是一个开源的、深度学习与信号处理结合的开发框架, 可方便的进行深度学习开发与训练, 并与传统信号处理方法兼容.

Services (学术服务)

Professional Society Membership and Services (学术组织与服务)

	Xi'an Jiaotong-Liverpool University (西交利物浦大学)
2022.07–	*External Mentor (校外导师)*
2021.11–	*Pilotage Mentor (领航导师)*
	IEEE
2016.01–	*Member*
2010.01–2015.12	*Student Member*
	CIE (中国电子学会)
2021.04–	*Member (会员)*
	JSAAI (江苏省人工智能学会)
2020.11–	*Member (会员)*

Journal Reviewers (期刊审稿人)

- *IEEE Transactions on Signal Processing* Journal, SCI.

- *IEEE Geoscience and Remote Sensing Letters* Journal, SCI.

- *IET Radar, Sonar & Navigation* Journal, SCI.

- *IET Electronics Letters* Journal, SCI.

- *IET Signal Processing* Journal, SCI.

- *Science China Information Science* Journal, SCI.

- *Cogent Engineering* Journal, SCI.

- 雷达学报 Journal, EI.

Organizing Committee Member and Technical Program Chair (学术会议组委会成员及学术主席)

- 2022 International Workshop on Microwave Vision and 3D SAR Imaging (MiViSAR 2022), Suzhou, China, Oct 17-19, 2022.

TPC Member / Reviewer (学术会议学术委员会成员 / 审稿人)

2022 | EEET 2022, EECSI 2022, IJCDS, IJECE 2021-22, FSDM 2022.

2021 | IJEECS 2021, BEEI 2020-21, ICITech 2021, FSDM 2021, TELKOMNIKA 2021.

2020 | CITEI 2020, SIRS 2020, FSDM 2020.

2019 | SIRS 2019, DISP 2019

2018 | CoSeRa 2018, SIRS 2018, EECSI 2018, ICW-TELKOMNIKA 2018, FSDM 2018.

2017 | ICITech 2017, EECSI 2017, SIRS 2017, FSDM 2017.

2016 | CoSeRa 2016.

2015 | CoSeRa 2015, ISSPIT 2015, ICSPDM 2015.

Publications (Bold for Corresponding / First Authorship)

JOURNAL ARTICLES

1. **M. Shao, Z. Zhang∗, J. Li, J. Kang and B. Zhang, "TADCG: A Novel Gridless Tomographic SAR Imaging Approach based on the Alternate Descent Conditional Gradient Algorithm with Robustness and Efficiency", IEEE Trans. Geosci. Remote Sens.,** *under review.*

2. **Y. Wu, Z. Zhang∗, X. Qiu, Y. Zhao and W. Yu, "MF-JMoDL-Net: A Deep Network for Azimuth Undersampling Pattern Design and Ambiguity Suppression for Sparse SAR Imaging", IEEE Trans. Geosci. Remote Sens.,** *under review.*

3. G. Zhou, Z. Xu, Y. Fan, Z. Zhang, X. Qiu, B. Zhang, K. Fu∗ and Y. Wu, "SPHR-SAR-Net: Superpixel High-resolution SAR Imaging Network Based on Nonlocal Total Variation," IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens., under review.

4. **S. Gao, Z. Zhang∗, M. Wang, Y. Zhang, J. Zhao, B. Zhang, Y. Wang and Y. Wu, "Efficient Gridless DoA Estimation Method of Non-uniform Linear Arrays with Applications in Automotive Radars," IEEE Trans. Vehicular Tech.,** *under review.*

5. **M. Wang, Z. Zhang∗, X. Qiu, S. Gao and Y. Wang, "ATASI-Net: An Efficient Sparse Reconstruction Network for Tomographic SAR Imaging with Adaptive Threshold," IEEE Trans. Geosci. Remote Sens.,** *accepted*.

6. **R. Shi, Z. Zhang∗, X. Qiu, and C. Ding, "A Novel Gradient Descent Least Squares (GDLS) Algorithm for Efficient Gridless Line Spectrum Estimation with Applications in Tomographic SAR Imaging," IEEE Trans. Geosci. Remote Sens.,** *under review*.

7. **J. Li, Z. Xu, Z. Li, Z. Zhang∗, B. Zhang, and Y. Wu, "An Unsupervised CNN-Based Multichannel Interferometric Phase Denoising Method Applied to TomoSAR Imaging," IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens., vol. 16, pp. 3784–3796, Jul. 2023, doi: 10.1109/JSTARS.2023.3263964**.

8. **Y. Zhao, Y. Chen, H. Tian, X. Quan, and Z. Zhang∗, "Wide Angle SAR Imaging Method Based on Blind Compressed Sensing," Electronics Letters,** *under review*.

9. **P. Jiang, Z. Zhang∗, and B. Zhang, "A novel TomoSAR imaging method with few observations based on nested array," IET Radar Sonar & Navigation,** *accepted*.

10. J. Kang∗, T. Ji, Z. Zhang, and R. Fernandez-Beltran, "SAR Time Series Despeckling via Nonlocal Matrix Decomposition in Logarithm Domain," Signal Processing, vol. 209, p. 109040, Aug. 2023, doi: 10.1016/j.sigpro.2023.109040.

11. **J. Kang∗, F. Tong, Y. Bai, T. Ji, and Z. Zhang∗, "SAR Time Series Despeckling and Component Analysis Method based on Matrix Decomposition," Journal of Radars,** *accepted*, in Chinese.

12. X. Ding, J. Kang∗, Z. Zhang, Y. Huang, J. Liu, and N. Yokoya, "Coherence-Guided Complex Convolutional Sparse Coding for Interferometric Phase Restoration," IEEE Trans. Geosci. Remote Sens., vol. 60, pp. 1–14, 2022, doi: 10.1109/TGRS.2022.3228279.

13. Z. Zhu, J. Kang∗, T. Ji, Z. Zhang, and R. Fernandez-Beltran, "SAR Time-Series Despeckling via Nonlocal Total Variation Regularized Robust PCA," IEEE Geosci. Remote Sens. Lett., vol. 19, pp. 1–5, 2022, doi: 10.1109/LGRS.2022.3227187.

14. **Y. Zhao, W. Huang, X. Quan, W.-K. Ling, and Z. Zhang∗, "Data-driven sampling pattern design for sparse spotlight SAR imaging," Electron. Lett., vol. 58, no. 24, pp. 920–923, Nov. 2022, doi: 10.1049/ELL2.12650**.

15. **Z. Xu, B. Zhang, Z. Zhang∗, M. Wang, and Y. Wu, "Nonconvex-Nonlocal Total Variation Regularization Based Joint Feature-Enhanced Sparse SAR Imaging," IEEE Geosci. Remote Sens. Lett., vol. 19, pp. 1–1, 2022, doi: 10.1109/lgrs.2022.3222185**.

16. Z. Lyu, X. Qiu∗, Z. Zhang and C. Ding, "Error Analysis of Polarimetric Interferometric SAR under Different Processing Modes In Urban Areas,", Journal of Radars, 2022, doi: 10.12000/JR22059, in Chinese.

17. **Z. Xu, G. Zhou, B. Zhang, Z. Zhang∗ and Y. Wu, "Sparse Regularization Method Combining SVA for Feature Enhancement of SAR Images," Electronics Letters, Jun. 2022, doi: 10.1049/ell2.12509**.

18. **Y. Zhao, J. Xu, X. Quan, L. Cui and Z. Zhang∗, "L_1 Minimization with Perturbation for Off-grid Tomographic SAR Imaging," Journal of Radars, vol. 11, no. 1, pp. 52-61, 2022**, in Chinese.

19. B. Du, X. Qiu∗, Z. Zhang, B. Lei and C. Ding, "Tomographic SAR Imaging Method Based on Sparse and Low-rank Structures," Journal of Radars, vol. 11, no. 1, pp. 62-70, 2022, in Chinese.

20. **Z. Zhang∗, B. Zhang, C. Jiang, X. Liang, L. Chen, W. Hong and Y. Wu, "The First Airborne Experiment of Sparse Microwave Imaging: Prototype System Design and Result Analysis," Available: http://arxiv.org/abs/2110.10675.**

21. **Z. Zhang∗, Y. Wang, and Z. Tian, "Efficient Two-Dimensional Line Spectrum Estimation Based on Decoupled Atomic Norm Minimization," Signal Processing, Vol. 163, pp. 95-106, 2019**.

22. **Z. Zhang∗, B. Zhang, W. Hong and Y. Wu, "Accelerated Error Compensation Algorithm of Sparse Microwave Imaging with Combination of Map-drift and SAR Raw Data Simulator," Journal of Radars, vol. 5, no. 1, pp. 25-34, 2016**, in Chinese.

23. **B. Zhang, Z. Zhang∗, C. Jiang, Y. Zhao, W. Hong and Y. Wu, "System Design and First Airborne Experiment of Sparse Microwave Imaging Radar: Initial Results," Science China Information Sciences (Series F), vol. 58, no. 6, 2015.**

24. C. Jiang∗, Y. Zhao, Z. Zhang, B. Zhang, and W. Hong, "Azimuth Sampling Optimization Scheme for Sparse Microwave Imaging Based on Mutual Coherence Criterion," Journal of Electronics and Information Technology, vol. 37, no. 3, 2015.

25. Y. Wu, W. Hong, B. Zhang∗, C. Jiang, Z. Zhang and Y. Zhao, "Current Developments of Sparse Microwave Imaging," Journal of Radars, vol.3, no. 4, pp. 383–395, 2014, in Chinese.

26. C. Jiang∗, B. Zhang, J. Fang, Z. Zhang, W. Hong, Y. Wu and Z. Xu, "An efficient Lq regularization algorithm with range-azimuth decoupled for SAR imaging," Electronics Letters, vol. 50, no. 3, pp. 204–205, 2014.

27. **Z. Zhang∗, B. Zhang, C. Jiang, Y. Xiang, W. Hong, and Y. Wu, "Influence factors of sparse microwave imaging radar system performance: approaches to waveform design and platform motion analysis," Science China Information Sciences (Series F), vol. 55, no. 10, pp. 2301–2317, 2012**.

28. C. Jiang∗, B. Zhang, Z. Zhang, W. Hong, and Y. Wu, "Experimental results and analysis of sparse microwave imaging from spaceborne radar raw data," Science China Information Sciences (Series F), vol. 55, no. 8, pp. 1801–1815, 2012.

29. M. Xie∗, R. Qiao, Z. Pan, D. Li, Y. Qiao and Z. Zhang, "Realization of an Improved Absolute Error Inequality Algorithm on DM642," Microelectronics & Computer, vol. 27, no. 4, pp. 182-185, 2010, in Chinese.

30. T. Wang∗, R. Qiao, Z. Pan, D. Li, Y. Qiao, F. Gao and Z. Zhang, "Research and Application of Vector Quantization Algorithm Based on DM642", in Proceedings of 2008 TI DSP Contest, pp. 143–161, Publishing House of Electronics Industry, Beijing, 2008, in Chinese.

KEYNOTES / INVITED TALKS

1. **Z. Zhang∗, "无网格稀疏信号处理及其在微波成像中的应用", in 当稀疏信号处理技术遇见雷达研讨会, Nanjing, 2021, *invited*.**

INVITED PEER-REVIEWED CONFERENCE PAPERS

1. **Z. Zhang***, **M. Jian, Z. Lu, H. Chen, S. James, C. Wang. and R. Gentile, "Embedded Micro Radar for Pedestrian Detection in Clutter", in IEEE International Radar Conference (RADAR 2020), 2020,** *invited.*

2. **Z. Zhang***, **B. Zhang, W. Hong, H. Bi and Y. Wu, "SAR Imaging of Moving Target in a Sparse Scene Based on Sparse Constraints: Preliminary Experiment Results," in 2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2015),** *invited.*

3. **W. Hong, B. Zhang, Z. Zhang***, **C. Jiang, Y. Zhao and Y. Wu, "Radar Imaging with Sparse Constraint: Principle and Initial Experiment," in 10th European Conference on Synthetic Aperture Radar (EuSAR 2014),** *invited.*

PEER-REVIEWED CONFERENCE PAPERS

1. **P. Jiang, Z. Zhang***, **and B. Zhang, "Efficient Sparse MIMO SAR Imaging with Fast Iterative Method Based on Back Projection and Approximated Observation," in 2022 5th International Conference on Electronics and Electrical Engineering Technology (EEET 2022), 2022, pp. 1–6.**

2. **S. Gao, Z. Zhang***, **B. Zhang, and Y. Wu, "Gridless Tomographic SAR Imaging Based On Accelerated Atomic Norm Minimization with Efficiency," in International Conference on Radar Systems 2022, 2022, pp. 1–6.**

3. **M. Wang, Z. Zhang***, **Y. Wang, S. Gao, and X. Qiu, "TomoSAR-ALISTA : Efficient TomoSAR Imaging via Deep Unfolded Network," in International Conference on Radar Systems 2022, 2022, pp. 1–6.**

4. Z. Xu, G. Zhou, B. Zhang, Z. Zhang, and Y. Wu, "An Accurate Sparse SAR Imaging Method for Joint Feature Enhancement Based on Nonconvex-Nonlocal Total Variation Regularization," in 14th European Conference on Synthetic Aperture Radar (EUSAR 2022), 2022, pp. 576–581. [Online]. Available: https://ieeexplore.ieee.org/document/9944320.

5. M. Liu, J. Li, Z. Zhang, B. Zhang, and Y. Wu, "Azimuth Ambiguities Suppression for Multichannel SAR Imaging Based on L2,q Regularization: Initial Results of Non-sparse Scenario," in International Geoscience and Remote Sensing Symposium (IGARSS) 2021, 2021, pp. 3153–3156.

6. B. Du, Z. Zhang, X. Qiu, B. Lei, and C. Ding, "Multi-aspect Tomographic SAR Imaging Approach via Distributed Compressed Sensing and Joint Sparsity," in CIE Radar Conference 2021, 2021, pp. 2–5.

7. Z. Wang, X. Lin, X. Xiang, Z. Zhang, Z. Tian, K. Pham, E. Blasch and G. Chen, "A hidden chamber detector based on a MIMO SAR", in Proc. SPIE 11017, Sensors and Systems for Space Applications XII, 1101706, 2019.

8. P.Xu, Z. Tian, Z. Zhang and Y. Wang, "COKE: Communication-Censored Kernel Learning via random features", in the 2019 IEEE Data Science Workshop (DSW 2019), 2019.

9. **Z. Zhang, X. Chen and Z. Tian∗, "A Hybrid Neural Network Framework and Application to Radar Automatic Target Recognition", in the 6th IEEE Global Conference on Signal and Information Processing (GlobalSIP 2018), 2018.**

10. **Z. Zhang and Z. Tian∗, "ANM-PhaseLift: Structured Line Spectrum Estimation from Quadratic Measurements", in 7th IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP 2017), 2017.**

11. **Z. Tian, Z. Zhang∗ and Y. Wang, "Low-complexity optimization for Two-Dimensional Direction-of-arrival Estimation via Decoupled Atomic Norm Minimizationg", in 42th International Conference on Acoustics, Speech, and Signal Processing (ICASSP 2017), 2017.**

12. **Z. Zhang∗, Z. Tian, B. Zhang, W. Hong, W. Hong and L. Li, "Multi-channel SAR Covariance Matrix Estimation Based on Compressive Covariance Sensing", in 4th International Workshop on Compressive Sensng Theory and its Applications to Radar, Sonar and Remote Sensing (CoSeRa 2016), 2016.**

13. C. Jiang∗, Y. Lin, Z. Zhang, B. Zhang and W. Hong, "WASAR Imaging based on message passing with structured sparse constraint: approach and experiment", in 3th International Workshop on Compressive Sensng Theory and its Applications to Radar, Sonar and Remote Sensing (CoSeRa 2015), 2015.

14. X. Quan∗, C. Jiang, Z. Zhang, B. Zhang and Y. Wu, "A Study of BP-CAMP Algorithm for SAR Imaging," in 2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2015), 2015.

15. X. Quan∗, Z. Zhang, C. Jiang, B. Zhang and Y. Wu, "Comparison of Several Sparse Reconstruction Algorithms in SAR Imaging,", in IET International Radar Conference 2015, 2015.

16. W. Wang∗, B. Zhang, W. Hong, Z. Zhang, Y. Zhao, C. Jiang and H. Bi, " Polarimetric SAR Tomography of Forested Areas Based on Compressive MUSIC," in 2014 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2014), 2014.

17. **Z. Zhang∗, Y. Zhao, C. Jiang, B. Zhang, W. Hong and Y. Wu, "Initial Analysis of SNR / Sampling Rate Constraints in Compressive Sensing based Imaging Radar," in 2nd Workshop on Compressive Sensng Applied to Radar (CoSeRa 2013), 2013**.

18. B. Zhang, C. Jiang∗, Z. Zhang, J. Fang, Y. Zhao, W. Hong, Y. Wu and Z. Xu, "Azimuth Ambiguity Suppression for SAR Imaging based on Group Sparse Reconstruction", in Workshop on Compressive Sensng Applied to Radar (CoSeRa 2013), 2013.

19. **Z. Zhang∗, Y. Zhao, C. Jiang, B. Zhang, W. Hong and Y. Wu, "Autofocus of Sparse Microwave Imaging Radar Based on Phase Recovery," in 2nd IEEE International Conference on Signal Processing, Communications and Computing (ICSPCC 2013), 2013**.

20. **Z. Zhang∗, B. Zhang, W. Hong, and Y. Wu, "Waveform Design for Lq Regularization Based Radar Imaging and An Approach to Radar Imaging with Non-moving Platform," in 9th European Conference on Synthetic Aperture Radar (EuSAR 2012), 2012**.

21. **B. Zhang, <u>Z. Zhang</u>∗, W. Hong, and Y. Wu, "Applications of Distributed Compressive Sensing in Multi-channel Synthetic Aperture Radar," in 1st Workshop on Compressive Sensng Applied to Radar (CoSeRa 2012), 2012**.

PATENTS

1. **<u>Z. Zhang</u>∗, Y. Zhao, B. Zhang, W. Hong and Y. Wu, "一种基于相位恢复的机载稀疏微波成像自聚焦方法," CN:201310737404.4**.

2. **<u>Z. Zhang</u>∗, B. Zhang, W. Hong, Y. Wu and X. Quan, "一种基于 PhaseLift 的稀疏微波成像自聚焦方法," CN:201510227896.1**.

3. B. Zhang, W. Hong, Y. Wu and <u>Z. Zhang</u>∗, "装载于慢速平台上的成像雷达的稀疏微波成像方法及装置," CN:201310117111.6.

4. X. Quan∗, B. Zhang, C. Jiang, Y. Zhao, <u>Z. Zhang</u> and Y. Wu, "一种基于稀疏度估计的分维度阈值迭代稀疏微波成像方法," CN:201410497525.0.

5. Y. Wu, X. Quan∗, B. Zhang and <u>Z. Zhang</u>, "基于正则化的偏置相位中心天线成像方法," CN:201610202747.4.