



智能高维信号处理

王正 副教授 博导

2025.8

汇报提纲

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- 01 个人简介
- 02 研究内容介绍
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个人简介

<https://radio.seu.edu.cn/2023/1025/c19941a469691/page.htm>

<https://seu-zheng-wang.github.io/> (Github国内网络不稳定, 建议电脑端网页刷新打开)



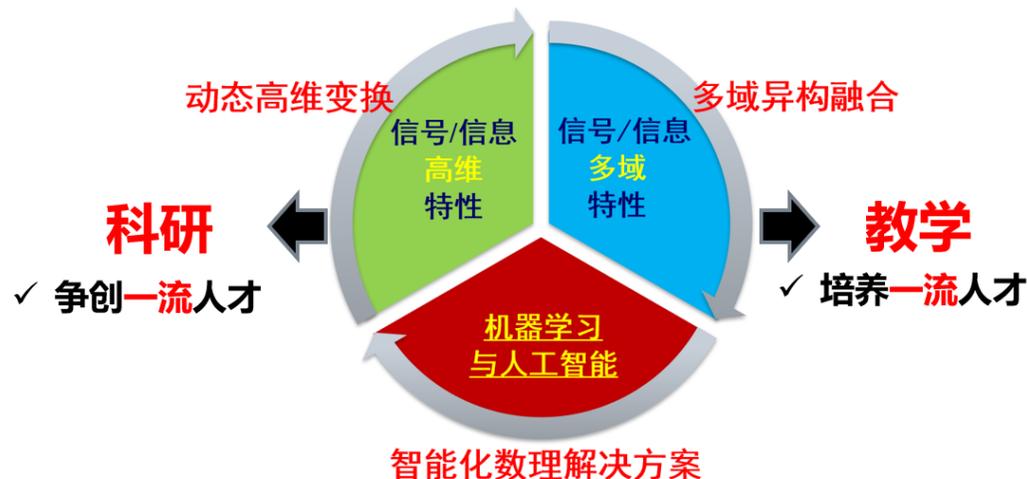
王正

副教授, 博士生导师, IEEE高级会员, 江苏省双创博士

爱思唯尔中国高被引学者

2021年加入东南大学信息科学与工程学院, 移动通信全国重点实验室

- ✦ 研究方向: **智能无线通信系统信号传输与检测**
机器学习与数理统计
数据深度分析与挖掘



研究导向: 理论算法研究+项目

研究成果: 顶尖学术论文+专利

- ✦ 研究特色: **交叉领域, 多学科融合, 基础性, 普适性**

学术影响力

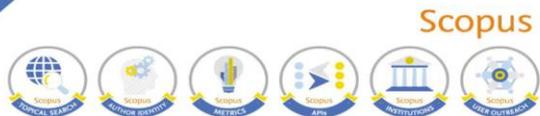


2023 RISTA 前沿大讲堂

基于等价概率模型的
低复杂度大规模MIMO
上下行信号
处理

2023年10月23日 20:00 - 21:00

腾讯会议+直播



2023 Most Cited Chinese Researchers 爱思唯尔2023中国高被引学者

Awarded to:
王正
东南大学

For exceptional research performance in the field of
信息与通信工程



2024 Most Cited Chinese Researchers 爱思唯尔2024中国高被引学者

Awarded to:
王正
东南大学

For exceptional research performance in the field of
信息与通信工程



智能高维信号处理 INTELLIGENT HIGH-DIMENSIONAL SIGNAL PROCESSING



热烈欢迎各位专家参加“海纳百川 无线未来技术研讨会”

2024/06/07 HUAWEI

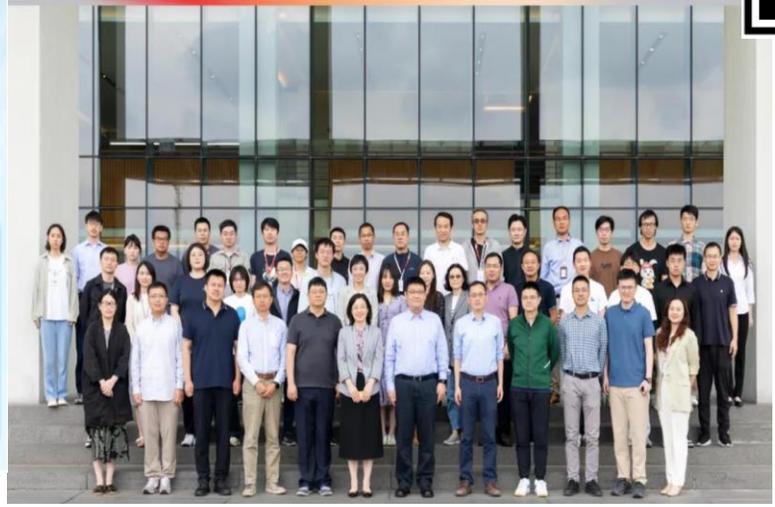


2024.06.22 第 34 期

基于随机迭代的超大规模MIMO上行信号检测理论

2024年06月22日 (周六)
16:00 - 17:00 (GMT+8)

演讲嘉宾: 王正 (东南大学)
联系邮箱: wzeng@东南大学.edu.cn
直播平台: <https://live.bilibili.com/26689747>



王正 副教授

华为向全社会发布难题，兼顾产业挑战和科学价值。探索、牵引、开放、思辨，百花齐放，百家争鸣。

王正副教授在无线领域第一期难题“高效基带矩阵处理-高维矩阵快速计算”中，从概率视角去看矩阵快速计算，提出了一种基于随机迭代的低复杂度预编码算法，突破传统系统的迭代方法中采用随机抽样降维，具有指数级性能提升。所提供的算法思路新颖，对无线通信领域具有较高的高发价值，被授予华为公司颁发的“火花奖”。

Huawei provides challenges and scientific value to the entire society while taking into account the industrial challenges and scientific value, in exploring, leading, open, and thinking,百花齐放,百家争鸣.

As a way to certify that associate professor Wang Zheng has made inspirational contributions to the "Efficient Baseband Matrix Processing - Fast Calculation for Large-Dimensional Matrices" challenge of Wireless Domain Issue 1. Considering the matrix inversion problem from the perspective of probability, Wang proposed an innovative algorithm - lower-complexity precoding based on randomized iteration. The algorithm uses random sampling to reduce dimensions in the traditional iteration method, leading to an exponential increase in convergence performance.

颁奖日期: 2024.06.07

颁奖地点: 东南大学

颁奖嘉宾: 王正 (东南大学) 等

颁奖证书: 华为技术有限公司颁发

研究工作位于领域前列

报告摘要

作为6G移动通信的核心关键技术之一，超大规模MIMO能够大幅提高通信系统的频谱和能量效率。相比于传统大规模MIMO，超大规模MIMO在系统高维化、场景多样化、信道复杂化、网络智能化、架构去中心化等方面体现了自身特点和发展趋势，因而在低复杂度、高性能、普适性、灵活性和智能与分布式实现等诸多方面对上行信号检测算法提出了更高的需求与挑战。为了突破传统研究思路，本工作在等价概率模型的研究思路下，提出基于随机迭代的超大规模MIMO检测理论与方法，在随机迭代降维求解、指数收敛、全局收敛等特性的基础上深入挖掘超大规模MIMO检测的潜力与优势，探索完善的超大规模MIMO随机迭代检测理论与方法体系。

邀请人: 肖泳 (华中科技大学)

主办单位: 中国电子学会通信分会
承办单位: 上海交大、华中科技大学、中国移动、北邮、西电、中邮大、南邮、鹏城实验室、东南、中电科
协办单位: 无线领域一期(20240606)建群建网论坛、中国电子学会通信分会

ComSoc 中国电子学会通信分会

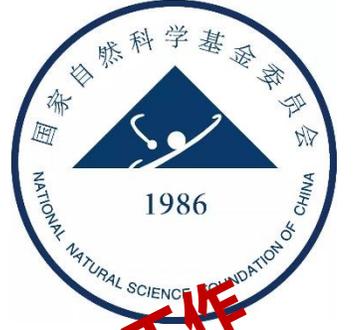
论文工作

(部分一作&通信作者Trans论文)

1. **Z. Wang*** and C. Ling, "Lattice Gaussian sampling by Markov chain Monte Carlo: Bounded distance decoding and trapdoor sampling," *IEEE Transactions on Information Theory*, vol. 65, no.6, pp. 3630-3645, June, 2019.
2. **Z. Wang*** and C. Ling, "On the geometric ergodicity of Metropolis-Hastings algorithms for lattice Gaussian sampling," *IEEE Transactions on Information Theory*, vol. 64, no. 2, pp. 738-751, Feb, 2018.
3. **Z. Wang***, Y. Huang and S. Lyu, "Lattice-Reduction-Aided Gibbs Algorithm for Lattice Gaussian Sampling: Convergence Enhancement and Decoding Optimization," *IEEE Transactions on Signal Processing*, vol. 67, no. 16, pp. 4342-4356, Aug, 2019.
4. **Z. Wang***, R. M. Gower, C. Zhang, S. Lyu, Y. Xia and Y. Huang, "A Statistical Linear Precoding Scheme Based On Random Iterative Method For Massive MIMO Systems," *IEEE Transactions on Wireless Communications*, vol. 21, no. 12, pp. 10115-10129, Dec. 2022.
5. **Z. Wang***, S. Lyu, L. Liu and Y. Xia, "Learning-Aided Markov Chain Monte Carlo Scheme for Spectrum Sensing in Cognitive Radio," *IEEE Transactions on Vehicular Technology*, vol. 71, no.10, pp. 11301-11305, Oct. 2022.
6. **Z. Wang***, R. M. Gower, Y. Xia, L. He and Y. Huang, "Randomized Iterative Methods for Low-Complexity Large-Scale MIMO Detection," *IEEE Transactions on Signal Processing*, vol. 70, pp. 2934-2949, 2022.
7. **Z. Wang***, "Markov chain Monte Carlo Methods for Lattice Gaussian Sampling: Convergence Analysis and Enhancement," *IEEE Transactions on Communications*, vol. 67, no. 16, pp. 6711-6724, Oct, 2019.
8. **Z. Wang***, L. Liu and C. Ling, "Sliced Lattice Gaussian Sampling: Convergence Enhancement and Decoding Optimization," *IEEE Transactions on Communications*, vol. 69, no. 4, pp. 2599-2612, April 2021.
9. **Z. Wang***, S. Lyu, Y. Xia and Q. Wu, "Expectation Propagation-based Sampling Decoding: Enhancement and Derandomization," *IEEE Transactions on Signal Processing*, vol. 69, pp. 195-209, 2021.
10. **Z. Wang***, Y. Xia, J. Li and Q. Wu, "A New Method of Integer Parameter Estimation in Linear Models with Applications to GNSS High Precision Positioning," *IEEE Transactions on Signal Processing*, vol. 69, pp. 4567-4579, 2021.
11. **Z. Wang***, S. Liu and C. Ling, "Decoding by sampling part II: Derandomization and soft-output decoding," *IEEE Transactions on Communications*, vol. 61, no. 11, pp. 4630-4639, Nov, 2013.
12. **Z. Wang***, W. Xu, Y. Xia, Q. Shi and Y. Huang, "A New Randomized Iterative Detection Algorithm For Uplink Large-scale MIMO Systems," *IEEE Transactions on Communications*, vol. 71, no. 9, pp. 5093-5107, Sept, 2023.
13. **Z. Wang***, J. Wang, Z. Gao, Y. Huang, D. W. K. Ng and L. Hanzo*, "Rapidly Converging Low-Complexity Iterative Transmit Precoders for Massive MIMO Downlink," *IEEE Transactions on Communications*, vol. 71, no. 12, pp. 7228-7243, Dec. 2023.
14. **Z. Wang***, C. Ling, S. Jin, Y. Huang and F. Gao, "Probabilistic Searching For MIMO Detection Based On Lattice Gaussian Distribution," *IEEE Transactions on Communications*, vol. 72, no. 1, pp. 85-100, Jan. 2024.
15. **Z. Wang***, Y. Xia, C. Ling and Y. Huang, "Randomized Iterative Sampling Decoding Algorithm For Large-Scale MIMO Detection," *IEEE Transactions on Signal Processing*, vol. 72, pp. 580-593, 2024.
16. **Z. Wang***, L. Liang, S. Lyu, Y. Xia, Y. Huang* and D. W. K. Ng, "Efficient Statistical Linear Precoding for Downlink Massive MIMO Systems," *IEEE Transactions on Wireless Communications*, Early Access, July. 2024.
17. **Z. Wang***, C. Pan, Y. Huang, S. Jin and G. Caire, "Randomized Iterative Algorithms for Distributed Massive MIMO Detection," *IEEE Transactions on Signal Processing*, vol. 73, pp. 2304-

项目工作

- ◆ 国家自然科学基金重点项目子课题(National Natural Science Foundation of China, **主持**)
- ◆ 国家自然科学基金面上项目(National Natural Science Foundation of China, **主持**)
- ◆ 国家青年自然科学基金(National Natural Science Foundation of China, **主持**)
- ◆ 江苏省青年自然科学基金(National Natural Science Foundation of Jiangsu Province, **主持**)
- ◆ 江苏省双创博士(Jiangsu Province, China, **主持**)
- ◆ 东南大学无线通信国家重点实验室开放课题基金(**主持**)
- ◆ 电磁频谱工信部重点实验室开放课题基金(**主持**)
- ◆ 西电综合业务网理论及关键技术国家重点实验室开放课题基金(**主持**)
- ◆ 电子信息系统复杂电磁环境效应国家重点实验室课题项目A(**主持**)
- ◆ 电子信息系统复杂电磁环境效应国家重点实验室课题项目B(**主持**)
- ◆ 中国航天科工集团八五一—研究所项目(CASIC, **主持**)
- ◆ 中国电子科技集团三十六所项目A(CECT, **主持**)
- ◆ 中国电子科技集团三十六所项目B(CECT, **主持**)
- ◆ 华为技术有限公司火花奖项目(Huawei, **主持**)
- ◆ 华为技术有限公司技术研究项目(Huawei, **主持**)
- ◆ 中兴通讯联合实验室重点项目A(ZTE, **主持**)
- ◆ 中兴通讯联合实验室重点项目B(ZTE, **主持**)
- ◆ 展讯通信企业研究项目(Spreadtrum Communications, **主持**)



ZTE中兴



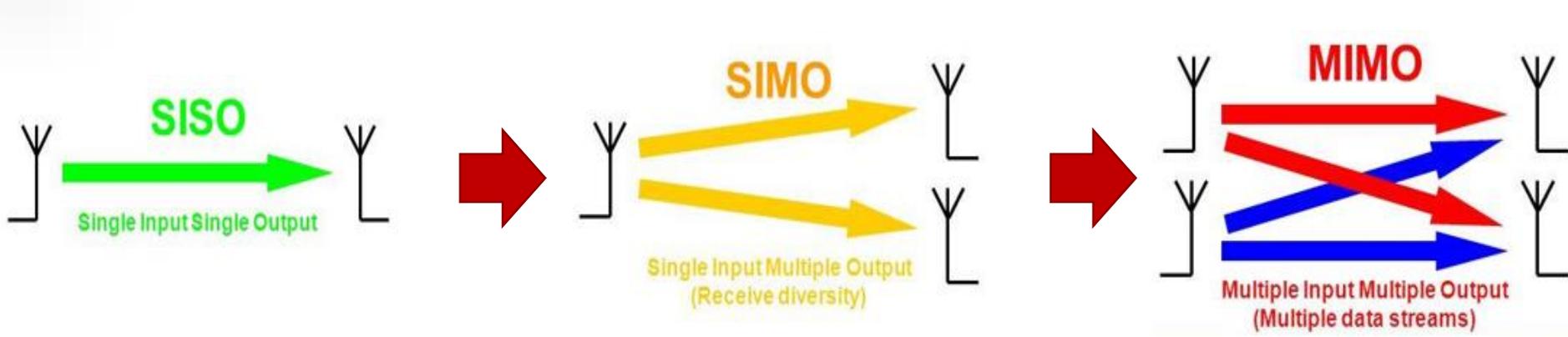
项目服务于研究, 在明确研究价值的同时反哺研究工作

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MIMO

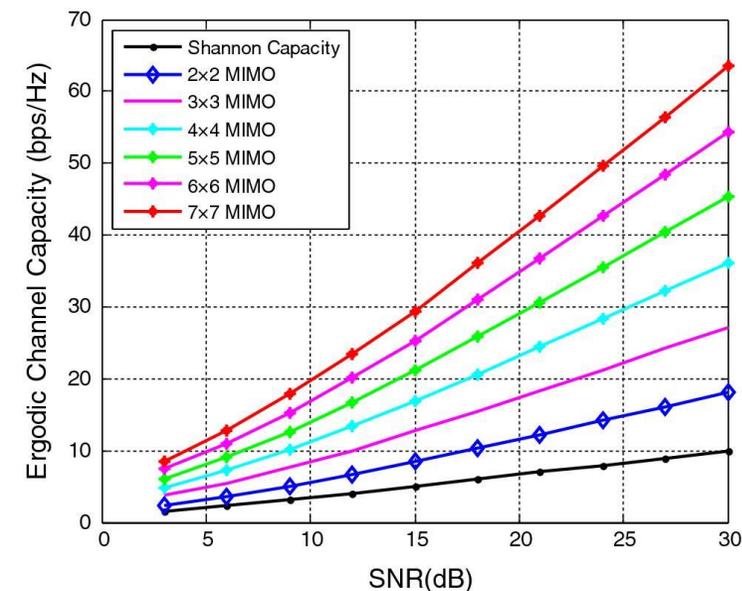


$$C_{\text{sum}} \Leftrightarrow \sum_{\text{Cells}} \sum_{\text{Channels}} B_i \log_2 \left(1 + \frac{P_i}{I_i + N_i} \right)$$

Diagram illustrating the components of the Shannon Capacity equation and associated technologies:

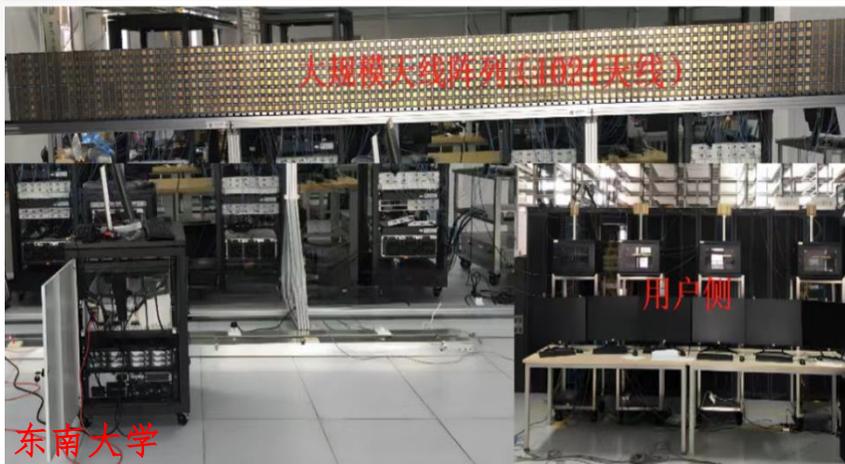
- 增加覆盖 (Increase Coverage):** Associated with the \sum_{Cells} term.
- 增加信道 (Increase Channels):** Associated with the \sum_{Channels} term.
- 增加带宽 (Increase Bandwidth):** Associated with the B_i term.
- 增加SINR (Increase SINR):** Associated with the $\frac{P_i}{I_i + N_i}$ term.

覆盖增强技术	频效提升技术	频谱拓展技术	能效提升技术
超密异构组网 D2D、M2M	大规模MIMO、 FBMC、空间调制	认知无线电、 毫米波、可见光	绿色通信 干扰管理
多址技术、用户调度、资源分配、用户/网络协作			

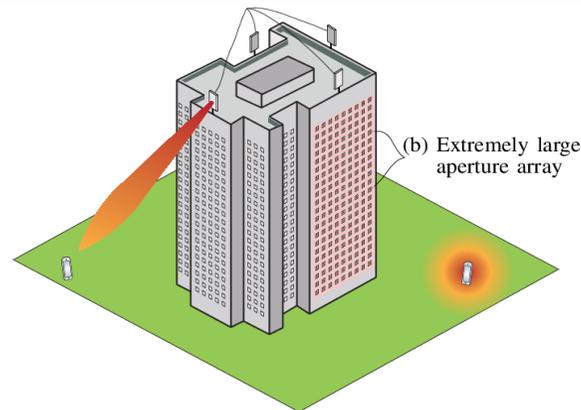


MIMO系统信道容量随着基站天线数或用户侧天线数二者中的最小数而呈现线性增长

MIMO发展趋势

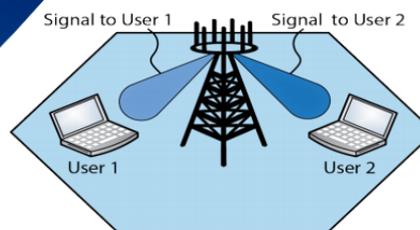


-6G 超大规模MIMO:
上千根天线



-5G

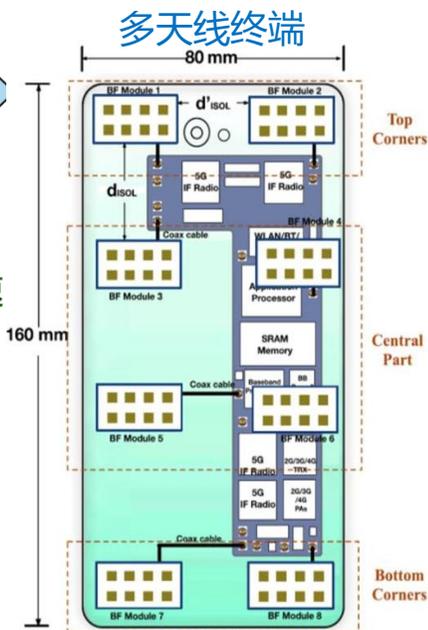
-大规模天线: 基站使用大规模天线阵列 (几十甚至上百根天线)



Multi-Antenna Transmission

-4G: 3GPP LTE-A标准

-最多支持8×8MIMO, 下行峰值速率1Gb/s

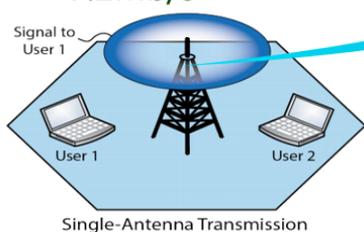


-4G: 3GPP LTE标准

-支持SISO, 2×2MIMO, 4×4MIMO。下行峰值速率100Mb/s。

-3G: WCDMA HSPA标准

-只能使用SISO, 下行峰值速率7.2Mb/s



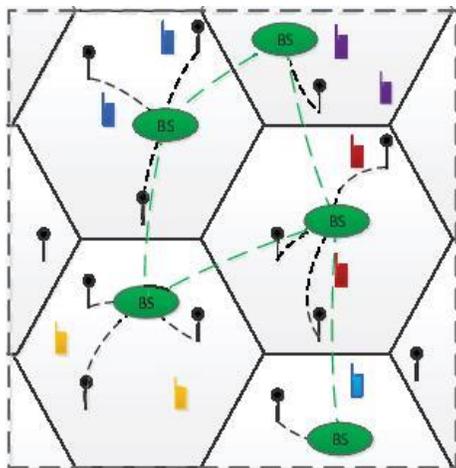
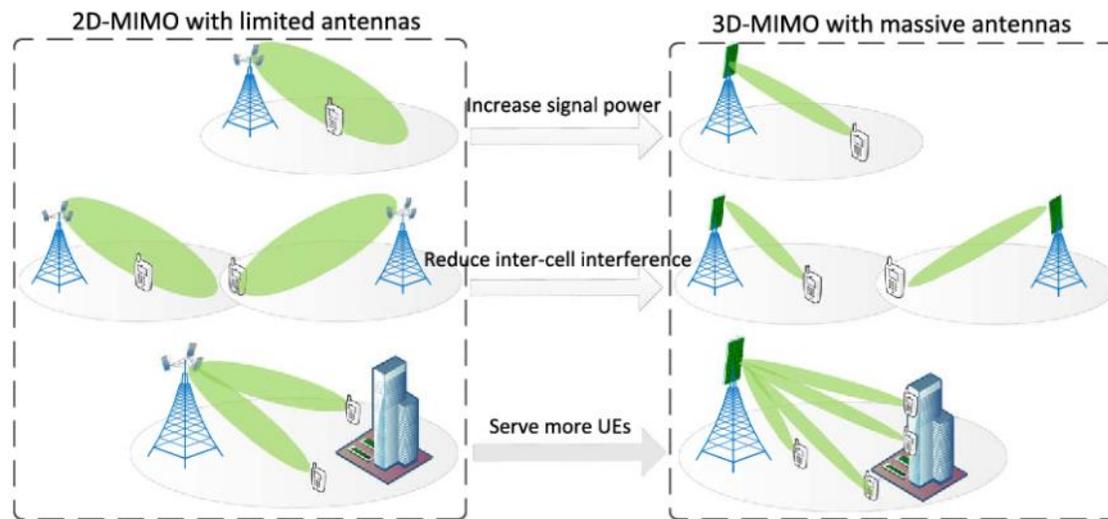
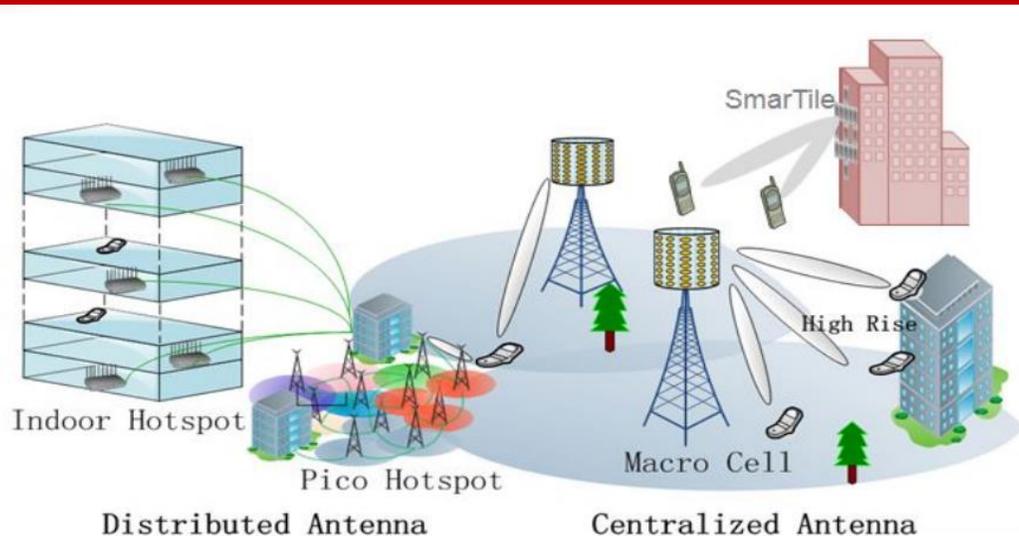
Single-Antenna Transmission

-3G: WCDMA HSPA+标准

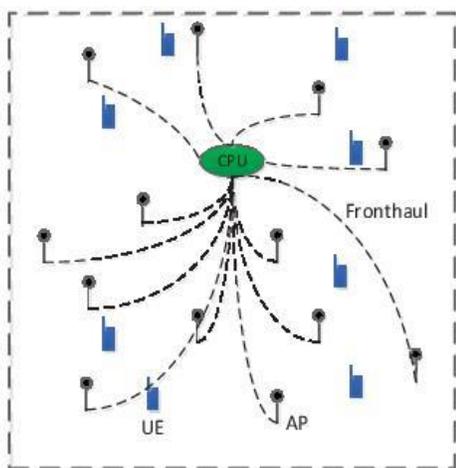
-支持2×2MIMO, 下行峰值速率42Mb/s

MIMO系统作为一种基础性的通信核心技术, 将会一直延续下去, 4G,5G,6G,7G.....

MIMO演进历程

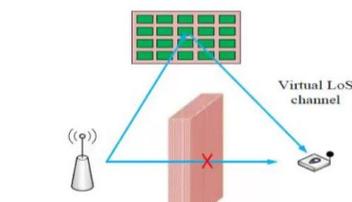


(a) Network MIMO

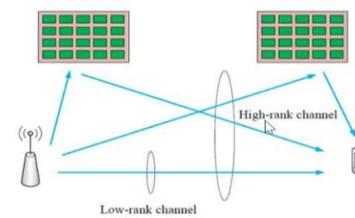


(b) CF massive MIMO

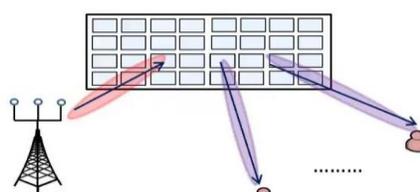
IRS Applications for Wireless Communications



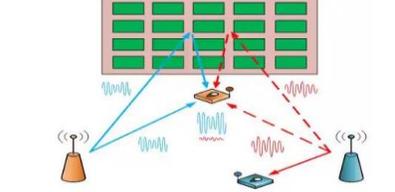
(a) Bypass obstruction



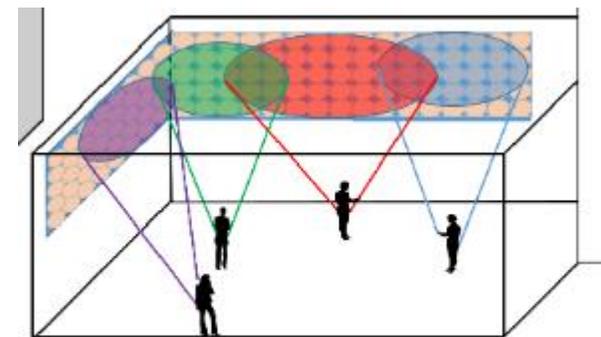
(b) Enhance MIMO channel rank



(c) Passive relaying/beamforming



(d) Passive Interference Cancellation



(a) XL-MIMO
(b) Large intelligent surface

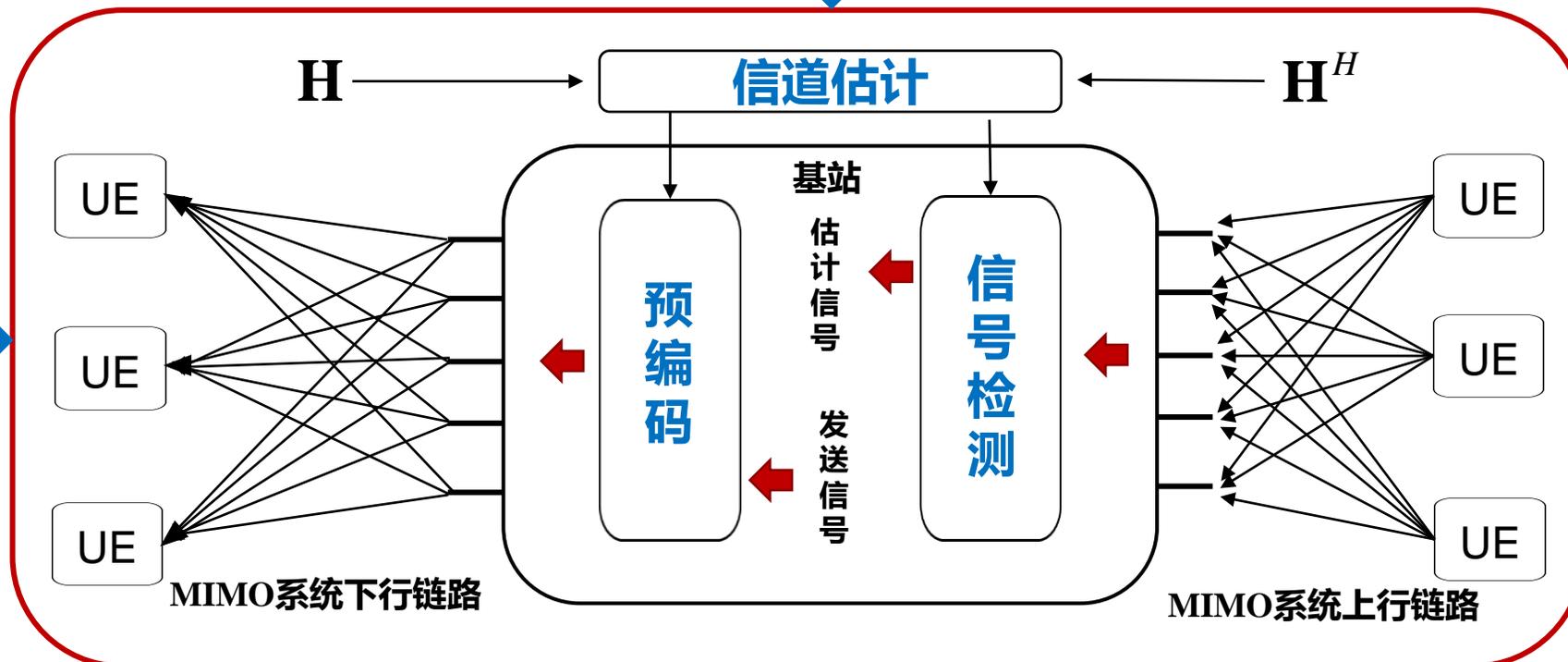
伴随着MIMO系统的不断演进，各种新的场景不断出现，各种新的问题也随之涌现.....

MIMO研究框架

数理统计 + 代数格理论 + 采样理论 + 优化理论 + 机器学习人工智能 +

相辅相成

面向核心基础问题



适配各种MIMO场景需求

性能 & 复杂度 & 时延 & 普适性 & 灵活性 & 智能化 &

MIMO系统 → 高维信号处理 → 智能高维信号处理

汇报提纲

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研究风格

始终身处科研一线，和博士硕士的科研是层次不同的平行线

更好的科研生态



工程师的五个等级



更多的选择，更好的就业

逐渐锻炼升级

深造
企业
研究所
事业单位
.....

做自己的科研
(五分耕耘一分收获)

同时

指导学生科研
(一分耕耘一分收获)

不停探索，保持自己的学术竞争力



高质量的指导和培养



Representative Publications

Journal Articles:

- [1] Z. Wang* and C. Ling, "Lattice Gaussian sampling by Markov chain Monte Carlo: Bounded distance decoding and random sampling," *IEEE Transact* [PDF] [\[Link\]](#)
- [2] Z. Wang* and C. Ling, "On th *Transactions on Inform*
- [3] Z. Wang*, Y. Huang and S. L. Enhancement and Decoding 16, pp. 4342-4356, Aug, 2019.
- [4] Z. Wang*, Y. Xia, C. Ling and *IEEE Transactions on Si*
- [5] Z. Wang*, R. M. Gower, Y. Xi Detection," *IEEE Transact*
- [6] Z. Wang*, S. Lyu, Y. Xia and *Transactions on Signal I*
- [7] Z. Wang*, Y. Xia, J. Li and Q. High Precision Positioning," [Link] [PDF]
- [8] Z. Wang*, "Markov chain Me *Transactions on Commu*
- [9] Z. Wang*, L. Liu and C. Ling, *Transactions on Commu*
- [10] Z. Wang*, S. Liu and C. Ling *on Communications (TC*
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- [11] Z. Wang*, W. Xu, Y. Xia, Q. Systems," *IEEE Transacti* [PDF]
- [12] Z. Wang*, J. Wang, Z. Gao, Precoders for Massive MIMO 7228-7243, Dec. 2023. [Link] |
- [13] Z. Wang*, C. Ling, S. Jin, Y. Distribution," *IEEE Transa* [PDF]
- [14] Z. Wang*, L. Liang, S. Lyu, Systems," *IEEE Transacti*
- [15] Z. Wang*, R. M. Gower, C. Zhang, S. Lyu, Y. Xia and Y. Huang, "A Statistical Linear Precoding Scheme Based On Random Iterative Method For Massive MIMO Systems," *IEEE Transactions on Wireless Communications (TWC, 通信权威期刊)*, vol. 21, no. 12, pp. 10115-10129, Dec. 2022. [Link] [PDF]

Articles of Supervised Students and Cooperation

- [1] Q. Chen, Z. Wang*, C. Qi, Z. Gao, Y. Huang and D. Niyato, "Decentralized Likelihood Ascent Search-Aided Detection For Distributed Large-Scale MIMO Systems," *IEEE Transactions on Wireless Communications*, vol. 24, no. 5, pp. 4160-4173, May 2025. [Link]
- [2] L. He, Z. Wang*, S. Yang, Detection," *IEEE Trans*
- [3] X. Yan, Z. Wang, Y. Jia, Z Fractional Programming I [Link]
- [4] G. Chen, Z. Wang*, H. Li Clustering and Beamform 2025, doi: 10.1109/TWC.2
- [5] L. He, Z. Wang*, Z. Gao, l Detection," *IEEE Trans*
- [6] Q. Chen, Z. Wang*, C. Ma MIMO," *IEEE Transac*
- [7] F. Shen, G. Ding, Q. Wu an *IEEE Transactions on*
- [8] G. Chen, Z. Wang*, Y. Jia Systems," *IEEE Transa*
- [9] F. Shen, Z. Wang*, G. Din Spectrum-Heterogeneous 2022. [Link]
- [10] G. Chen, Z. Wang*, H. L Cell-Free Systems," *IEEE*
- ▼ View More Earlier A
- [11] X. Yan, T. Ji, Z. Wang ar *IEEE Communication*
- [12] C. Yang, L. Tang and Z. V Detection," *2021 IEEE W* [Link]
- [13] L. He, T. Liu and Z. Wan *2021 IEEE 94th Vehicu*
- [14] N. Zhou, Z. Wang*, L. H *14th International Co* pp. 1096-1101. [Link]
- [15] X. Yan, Z. Wang, Y. Jia, Coherent Cell Free Network, *2023 IEEE Wireless Communications and Networking Conference (WCNC)*, Glasgow, United Kingdom, 2023, pp. 1-6. [Link]

The screenshot shows a file management interface with search filters and document details. The filters include '来自用户' (From User) set to '全部' (All), '所在会话' (Current Session) set to '工作周报' (Work Weekly Report), and '来源' (Source) set to '过墙知识库' (Over Wall Knowledge Base). The document list shows several entries with details like '所有者' (Owner), '发送于' (Sent on), and '修改于' (Modified on).

The screenshot shows a file management interface similar to the one on the left, but with a red 'X' and a green checkmark overlaid on the right side. The document list shows several entries with details like '所有者' (Owner), '发送于' (Sent on), and '修改于' (Modified on). The red 'X' is positioned over a document entry, and the green checkmark is positioned over another document entry.

个人特色培养思路

现象观察



个人思路

- 研一时间紧张，科研投入难以保证
- 起步最难，需要大量时间打基础
- ↓
- 培养重心后置（不足）
- ↓
- 真正科研时间略显仓促，对研究领域内容理解不够，试错空间少，且缺乏时间调整方向
- 科研起步需要时间，刚刚上路入门完成一个流程，面临毕业了
- ↓
- 潜力未充分挖掘，成果数量受限

- 保研时间充裕，却往往被忽视
- 专项起步保障+定制化毕设培养+科研流程初探
- ↓
- **培养重心前置+1对1指导（特色）**
- ↓
- 利用保研时间完成从无到0，从0到1的过程，需要花费大量导师精力
- 从1到10的过程，学生努力高飞，导师辅助指导，且时间充裕
- ↓
- 科研工作 ↑ 科研成果 ↑ 科研潜力 ↑ 未来发展 ↑

➤ 针对保研生（天然优势） ➤ 学生个人成长快，成果好，出路多 ➤ 研三轻松惬意，找工作时间多，就业好

保研学生情况介绍

2020年保研

Journals & Magazines > IEEE Transactions on Wireless... > Early Access

Generalizing Projected Gradient Descent for Deep-Learning-Aided Massive MIMO Detection

Publisher: IEEE Cite This PDF

Lanxin He; Zheng Wang; Shaoshi Yang; Tao Liu; Yongming Huang All Authors

投稿IEEE Trans. on Wireless Communications

Conferences > 2021 IEEE 94th Vehicular Tech...

Recurrent Sparse MIMO Detection Network Based on Modified Projected Gradient Descent Method

Publisher: IEEE Cite This PDF

Lanxin He; Tao Liu; Zheng Wang All Authors

投稿IEEE VTC国际会议



大四保研

研一

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Favorable-Propagation-Exploited Variational Inference for Massive MIMO Detection

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Lanxin He; Zheng Wang; Zhen Gao; Lei Liu; Yongming Huang All Authors

投稿IEEE Trans. on Vehicular Technology



Journals & Magazines > IEEE Transactions on Signal P... > Volume: 70

Randomized Iterative Methods for Low-Complexity Large-Scale MIMO Detection

Publisher: IEEE Cite This PDF

Zheng Wang; Robert M. Gower; Yili Xia; Lanxin He; Yongming Huang All Authors

A New Low-Complexity WMMSE Algorithm for Downlink Massive MIMO Systems

Publisher: IEEE Cite This PDF

Ningxin Zhou; Zheng Wang; Lanxin He

[2024届] 贺岚昕, 工学硕士 (南航期间招收) (Master of Engineering), 跟随王正老师继续读博(东南大学), PhD supervised by Dr. Zheng Wang in Southeast University

▼ 代表性成果

[J1] L. He, Z. Wang, S. Yang, T. Liu and Y. Huang, "Generalizing Projected Gradient Descent for Deep-Learning-Aided Massive MIMO Detection," **IEEE Transactions on Wireless Communications**, vol. 23, no. 3, pp. 1827-1839, March 2024.

[J2] L. He, Z. Wang, Z. Gao, L. Liu and Y. Huang, "Favorable-Propagation-Exploited Variational Inference for Massive MIMO Detection," **IEEE Transactions on Vehicular Technology**, vol. 73, no. 9, pp. 14074-14079, Sept. 2024.

[C1] L. He, T. Liu and Z. Wang, "Recurrent Sparse MIMO Detection Network Based on Modified Projected Gradient Descent Method," **IEEE Vehicular Technology Conference (VTC2021-Fall)**, Norman, OK, USA, 2021, pp. 1-5.

[C2] L. He, Z. Wang and Y. Huang, "A Massive MIMO Sampling Detection Strategy Based on Denoising Diffusion Model," **International Wireless Communications and Mobile Computing (IWCMC)**, Ayia Napa, Cyprus, 2024, pp. 1443-1448.

[J3] Z. Wang, R. M. Gower, Y. Xia, L. He and Y. Huang, "Randomized Iterative Methods for Low-Complexity Large-Scale MIMO Detection," **IEEE Transactions on Signal Processing**, vol. 70, pp. 2934-2949, 2022.

保研学生情况介绍

2021年保研

Conferences > 2022 14th International Confe...

A New Low-Complexity WMMSE Algorithm for Downlink Massive MIMO Systems

Publisher: IEEE Cite This PDF

Ningxin Zhou; Zheng Wang; Lanxin He; Yang Huang All Authors



Conferences > 2023 IEEE 97th Vehicular Tech...

Ordered Iterative Methods for Low-Complexity Massive MIMO Detection

Publisher: IEEE Cite This PDF IEEE VTC国际会议研一发表

Beilei Gong; Ningxin Zhou; Zheng Wang All Authors

WCSP国际会议研一发表

- [2025届] 周宁欣, 工学硕士(Master of Engineering), 就职于小米(上海) Xiaomi

▼ 代表性成果

[J1] N. Zhou, Z. Wang, Q. Shi, W. Xu and Y. Huang, "Model-driven Distributed WMMSE for Downlink Massive MIMO Systems," **IEEE Wireless Communications Letters**, early access, 2025.

[J2] N. Zhou, Z. Wang, C. Ma, Y. Huang and Q. Shi, "Distributed Precoder Based on Weighted MMSE With Low Complexity for Massive MIMO Systems," **IEEE Communications Letters**, vol. 29, no. 3, pp. 482-486, March 2025.

[C1] N. Zhou, Z. Wang, L. He and Y. Huang, "A New Low-Complexity WMMSE Algorithm for Downlink Massive MIMO Systems," **International Conference on Wireless Communications and Signal Processing (WCSP)**, Nanjing, China, 2022, pp. 1096-1101.

- [2025届] 龚蓓蕾, 工学硕士(Master of Engineering), 就职于国家电网(上海) State Grid

▼ 代表性成果

[J1] B. Gong, Q. Chen, Z. Wang, W. Xu and Y. Huang, "Feedback Interference Cancellation Detection for quantized Massive MIMO Systems," **IEEE Wireless Communications Letters**, early access, doi: 10.1109/LWC.2025.3588528.

[C1] B. Gong, N. Zhou and Z. Wang, "Ordered Iterative Methods for Low-Complexity Massive MIMO Detection," **IEEE Vehicular Technology Conference (VTC2023-Spring)**, Florence, Italy, 2023, pp. 1-5.

- [2025届] 高逸群, 工学硕士(Master of Engineering), 就职于普源精电(苏州) RIGOL Technologies

▼ 代表性成果

[J1] Y. Gao, Q. Chen, L. He, Z. Wang, J. Zhang, Y. Huang, Y. Gao, and Z. Xu, "Artificial Intelligence Enabled Joint Channel Estimation and Signal Detection for Massive MIMO Systems," **Chinese Journal of Electronics**, early access.

[C1] Y. Gao, H. Zhu, Z. Wang and Z. Gao, "Recursive Joint Channel Estimation and Signal Detection for Massive MIMO Systems," **IEEE INFOCOM 2025**, early access.

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校优秀论文

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Journals & Magazines > IEEE Transactions on Vehicula... > Early Access

General Recursive Least Square Algorithm For Distributed Detection In Massive MIMO IEEE Trans. on Vehicular Technology

Publisher: IEEE

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选择课题组内硕转博

Qiqiang Chen; Zheng Wang; Cong Ma; Xiaoming Dai; Derrick Wing Kwan Ng All Authors

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Energy Efficiency Optimization in Cell-Free Massive MIMO With Normalized Conjugate Beamforming

Publisher: IEEE

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Conferences > 2023 IEEE 23rd International ...

A Low-Complexity Gaussian Approximate Message Passing Detection Algorithm For Massive MIMO With High Order Modulation

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IEEE ICCT国际会议研一发表

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Yuanli Ma; Qiqiang Chen; Bin Yan; Zheng Wang; Lanxin He All Authors

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287 Full Text Views



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- 共计投稿6篇Trans (3 TWC, 1 TSP, 1 TCOM, 1 TVT) 和1篇WCL
- 已中稿3篇 (TVT, TWC, WCL)
- 修改中3篇 (TWC, TSP, TCOM)
- 审稿中1篇 (TWC)

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An Efficient NS-ADMM Detection for Uplink MIMO-ISAC Systems

Publisher: IEEE

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IEEE WCNC国际会议研一发表

Jian Wang; Qiqiang Chen; Zheng Wang; Wenbing Fan All Authors

96 Full Text Views



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➤ 耕耘之下，收获有预期

→ 快速成长，赋能挖潜

➤ 时间灵活，线上组会

→ 自我管理，高效沟通

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**感谢聆听！
有缘再见！**

