Assoc. Prof. Peng Chen

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Bio:

Peng Chen, Associate Professor at the State Key Laboratory of Millimeter Waves, Southeast University.

In recent years, he has undertaken or participated in 12 national and provincial projects, published 30 SCI-indexed papers (2 ESI highly cited papers), and been granted 10 patents. He is currently an IEEE Senior Member and a CIE Senior Member. He serves as a guest editor for SCI journals, and as a reviewer for many international renowned journals including IEEE TSP, IEEE TWC, and IEEE TVT. He has also served as an IEEE ICCC Session Chair, was recognized as an exemplary reviewer for IEEE WCL in 2021, and won the Best Paper Award at IEEE ICCCCEE 2017. He was invited as a keynote speaker at the IEEE ICET International Academic Conference in 2022, won the Best Presentation Award at the IEEE ICCC Conference in 2022, and was selected as a Science and Technology Vice President of Jiangsu Province's High-level Talent Program in 2019. In 2021, he published the monograph "Optimization and Target Location Method of New Regime Radar", won the third prize of the Jiangsu Science and Technology Award (ranked 2nd), and obtained the Jiangsu Province Excellent Young Scientists Fund in 2022.

Speech Title: Efficient DOA Estimation Method for Reconfigurable Intelligent Surfaces Aided UAV Swarm

Speech Abstract: The conventional direction of arrival (DOA) estimation methods are performed with multiple receiving channels. A changeling DOA estimation problem is addressed in a different scenario with only one full-functional receiving channel. A new unmanned aerial vehicle (UAV) swarm system using multiple lifted reconfigurable intelligent surface (RIS) is proposed for the DOA estimation. The UAV movement degrades the DOA estimation performance significantly, and the existing atomic norm minimization (ANM) methods cannot be used in the scenario with array perturbation. Specifically, considering the position perturbation of UAVs, a new atomic norm-based DOA estimation method is proposed, where an atomic norm is defined with the parameter of the position perturbation. Then, a customized semi-definite programming (SDP) method is derived to solve the atomic norm-based method, where different from the traditional SDP method, an additional transforming matrix is formulated. Moreover, a gradient descent method is applied to refine the estimated DOA and the position perturbation further. Simulation results show that the proposed method achieves much better DOA estimation performance in the RIS-aided UAV swarm system with only one receiving channel than various benchmark schemes.