Full Name (English):	Wenpeng Zhang	
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Biography
(Please provide in paragraph form within 500 words.)

Wenpeng Zhang received the B.S., M.S., and Ph.D. degrees from the National University of Defense Technology, Changsha, China, in 2012, 2014, and 2018, respectively. He is currently an Associate Professor with the College of Electronic Science, National University of Defense Technology. His research interests include nonlinear radar signal processing, feature extraction and intelligent recognition. He has published several articles in respected journals, including IEEE Transactions on Signal Processing, IEEE Transactions on Instrumentation and Measurement, IEEE Transactions on Aerospace and Electronic Systems.

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Speech Title (English):

Nonlinear Representation, Estimation and Intelligent Recognition for Radar Targets with Micro-Motion

Speech Abstract
(Please provide in paragraph form within 500 words.)

The modulation signatures of radar echoes induced by micromotions contain detailed information on the structures and motions of radar targets. It is an important direction in the field of radars to mine and extract specific micro-motion information about the target from radar echoes and achieve target recognition. However, under non-cooperative and strong adversarial conditions, the target motion pattern is complex and varied, and with the influence of noise and interference, radar echoes often appear as weak, complex nonlinear coupled modulation signals. How to extract target micro-motion features from complex nonlinear coupled modulation radar echoes/data and accurately determine target identity and attributes is an internationally recognized scientific and engineering challenge.

This speech addresses the problems of limited representation accuracy, poor parameter estimation robustness, and single recognition feature information in existing methods under low signal-to-noise ratio and complex translational conditions. Specifically, promising approaches for extracting micromotion information, including sparse time-frequency-frequency rate representation, novel estimation statistics in the transform domain, and network-based feature fusion recognition methods, are presented to solve the issues of the current strategies, such as limited accuracy of the representation, poor robustness of parameter estimation, and mono-modality features for target recognition. Lastly, a summary of ongoing research on target micro-motion is presented, and future directions are discussed.