

Research Progresss on Multidimensional Space Joint-observation SAR

Wen Hong¹

¹Institute of Electronics, Chinese Academy of Sciences, Beijing, 100190, China

Abstract—With the application requirement and technology development, the necessity and tendency of Synthetic Aperture Radar (SAR) imaging within the framework of multidimensional space joint-observation, which are polarimetry, frequency, angle, time series and etc., evoke catholic interests in SAR imaging research nowadays. Recent research progress on the Multidimensional Space Joint-observation SAR (MSJosSAR) in the National Key Lab of Microwave Imaging Technology, Institute of Electronics, Chinese Academy of Sciences(MITL-IECAS) is reported in this talk, where the a sphere cluster cordinate system is defined as the modeling basis on the demand of information fusion for SAR multidimensional space joint-observation. Further more, the advantage of MSJosSAR is revealed by using Kronecker product decomposition for better understanding of target scattering mechanisms, with the hypothesis and basic framework on which the MSJosSAR signal processing relies on. Tentative studies on multi-layer material with PolinSAR technique, anisotropic scattering mechanisms with multi-directional observation (cuverture or circular SAR technique), and instantaneous time-variant target with array SAR technique are demonstrated as the initial verification of the above defined hypothesis and framework. Finally, the value of joint observation space numbers for typical SAR configurations is enumerated, followed by the perspective discussions on the future work for MSJosSAR study.

BIOGRAPHY

Dr. Wen Hong had her Ms.and Ph.D. degree thesis work in Northwestern Polytechnical Univ.(NPU) and Beijing Univ. of Aeronautics and Astronautics(BUAA), in 1993 and 1997 respectively. After that till the year of 2002, she served as a faculty staff in the Dept. of E.E., BUAA. In between, she was a guest scientist in the Microwaves and Radar Institute in German Aerospace Center(DLR-HF) in 1998. She joined the Institute of Electronics, Chinese Academy of Sciences(IECAS) since 2002 till now. As a researcher and a Ph.D. candidate programm supervisor in the IECAS, her research interests are Pol/PolinSAR data processing, 3D SAR data acquization and processing, sparse signal processing in microwave imaging and etc.