

EARTH OBSERVATION SYMPOSIUM (B1)  
Poster Session (P)

Author: Mr. Yang Zhao  
Beijing Institute of Tracking and Telecommunication Technology (BITTT), China,  
zhaoyang.cts@gmail.com

## NARROWBAND RADAR IMAGING BASED ON COMPRESSED SENSING

**Abstract**

Abstract: Narrowband radar imaging is a popular research field. Imagery from low bandwidth radar with high spatial resolution is obtained by applying the principles of tomography to a multi-site radar system that can illuminate the target over a complete angular range of 360 degrees. And it is proved that there is no theoretical limit of the resolution of the sensor with as many radar receivers as possible. However, as the scattering point structure of rigid body is fixed, space sparsity condition is gained. In this situation, compressed sensing technique is introduced to reduce the radar the quantity of the multi-site system. Theoretical derivation proves that random site arrangement in angular range is efficient to reconstruct the measurement matrix of the original system and the total number of radars in need is lowered at the same time. Simulation results clarify the theoretical conclusion.

Keyword- narrowband imaging; tomography; compressed sensing; space sparsity