

Meeting: 1005, Newark, Delaware, SS 3A, Special Session on Mathematical Methods in Electromagnetic Wave Propagation

1005-65-120 **Fengshan Liu**, DE, **Guoping Zhang*** (gzhang@desu.edu), 1200 North Dupont Highway, Dover, DE 19901, and **Yi Ling**, **Xiquan Shi** and **Xiang-Gen Xia**, 1200 N Dupont Hwy, Dover, DE 19901, and **Lam Nguyen** and **David Wong**. *UWB SAR imaging with back projection algorithm along the nonlinear moving path.*

Army Research Laboratory (ARL) uses ultra-wide band (UWB) BoomSAR system to collect the back-scattered signals and employs the back-projection algorithm to form images. The back-projection algorithm is expected to produce higher quality images, provided that the original radar motion is available. In the case when the radar aperture is moving on a straight line, the sampling summation over the noise is zero. Therefore the noise is eliminated over the back projection. However, the small vibration, particularly the vibration on the down-range direction, of the boom and basket (which holds the antennas and radar system) during motion produces noise to the radar signal and makes the actual radar path nonlinear. With the current back projection method which requires the radar moving on a straight line, the noise can not be removed effectively. We design a new back-projection algorithm along nonlinear moving path to reduce the noise in the UWB SAR images. (Received February 03, 2005)