Microwave Imaging by Application of Information Theory Criteria in MUSIC Algorithm

Authors : Majid Pourahmadi

Abstract : The performance of time-reversal MUSIC algorithm will be dramatically degrades in presence of strong noise and multiple scattering (i.e. when scatterers are close to each other). This is due to error in determining the number of scatterers. The present paper provides a new approach to alleviate such a problem using an information theoretic criterion referred as minimum description length (MDL). The merits of the novel approach are confirmed by the numerical examples. The results indicate the time-reversal MUSIC yields accurate estimate of the target locations with considerable noise and multiple scattering in the received signals.
Keywords : microwave imaging, time reversal, MUSIC algorithm, minimum description length (MDL)