ABSTRACT

Multiple-Input-Multiple-Output (MIMO) radar is an advanced technology of phased array radar. The MIMO radar has many advantages such as increasing resolution and fading mitigation. In practical, wireless technology will remain a problem such as complication from fading, where not all signals will be directly received by the receiving device. One important aspect in radar is the estimation of the angle or Direction of Arrival (DOA).

MUSIC Algorithm is an algorithm for estimation of angles that has high resolution and simple computation, which works based on the principle of eigenvalue decomposition. In order to achieve the results obtained the estimation of DOA .

The results of this task by simulating the 3D Electromagnetic Design Software to analyze the effect of number of antenna elemen, SNR, k-factor, and doppler shift on angular accuracy on MIMO radars with fading rician channel using the MUSIC algorithm. The results from simulation obtained the average accuracy value for MIMO radars with 2X2 configuration is 86,38%, for MIMO radars with 4X4 configuration is 94,84%, while for MIMO radar the 8X8 configuration is 98,3%. In addition, the results for the effect of the number of antenna elements on the detection accuracy can be concluded that the more the number of antenna elements used, the higher the accuracy value, as well as the effect of the SNR value on the detection accuracy value.

Kata Kunci: *MIMO Radar*, *Direction of Arrival* (DOA), Algorithm *MUSIC*, *fading rician*.